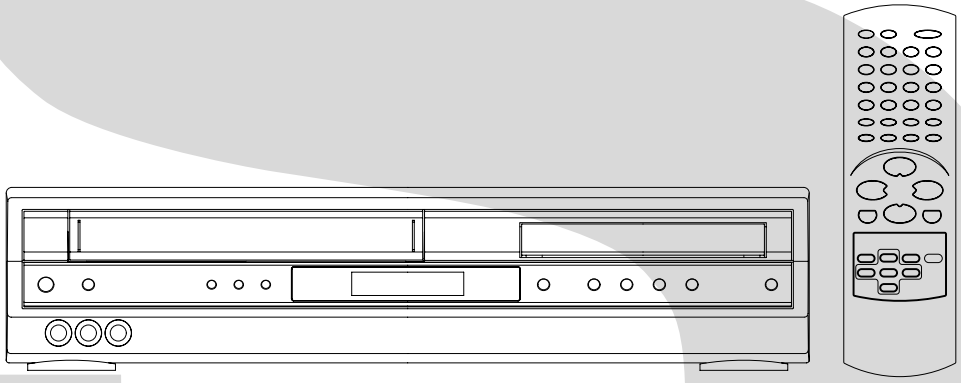
TOSHIBA

FILE NO. 810-200401

SERVICE MANUAL

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V392SU



DOCUMENT CREATED IN JAPAN, Dec., 2003

TOSHIBA

J2C53301A

04/01 U

Printed in Thailand

TOSHIBA

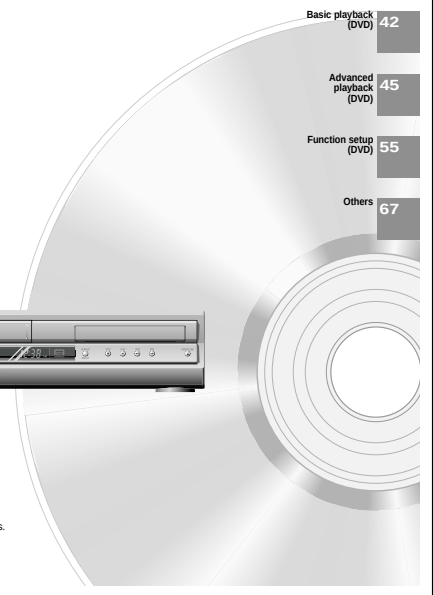
Introduction 2
Connections 14
Basic setup 22
Playback (VCR) 29
Recording (VCR) 34
Other functions (VCR) 39
Basic playback (DVD) 42
Advanced playback (DVD) 45
Function setup (DVD) 55
Others 67

DVD VIDEO PLAYER & VIDEO CASSETTE RECORDER

SD-V392

OWNER'S MANUAL

VHS Hi-Fi SQPB



©2004 Toshiba Corporation
This device does not tape-record copy protected DVD Video Discs.

IMPORTANT SAFEGUARDS

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: **TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, do not expose this appliance to rain or moisture.**

CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS POLARIZED PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

WARNING: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.
However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by the partly responsible for compliance with the FCC Rules could void the user's authority to operate this equipment.

CAUTION: THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

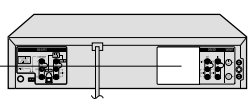
TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS USER'S GUIDE CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.

CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.



IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning the exterior cabinet only.
6. **ATTACHMENTS**
   The manufacturer of this unit does not make any recommendations for attachments, as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided and/or the manufacturer's instructions have been adhered to.
10. **POWER SOURCE**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Instead of the polarized alternating-current line plug, your unit may be equipped with a 3-wire grounding-type plug (a plug having a third (grounding) pin). This plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet.Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

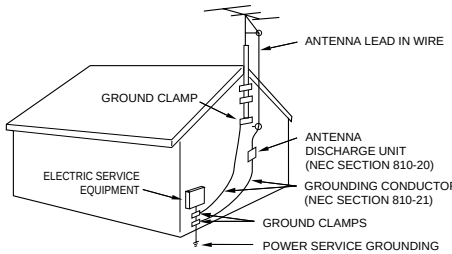
IMPORTANT SAFEGUARDS

13. **LIGHTNING**
To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall onto or against such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.
17. **OUTDOOR ANTENNA GROUNDING**
If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges, Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.
18. **SERVICING**
Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
For example:
a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f . When the unit exhibits a distinct change in performance, this indicates a need for service.
19. **REPLACEMENT PARTS**
When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original part.
Unauthorized substitutions may result in fire, electric shock or other hazards.
20. **SAFETY CHECK**
Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
21. **HEAT**
The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.
22. **DISC TRAY**
Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.
23. **CONNECTING**
When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

IMPORTANT SAFEGUARDS / Power source

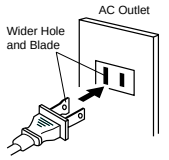
24. **LASER BEAM**
Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.
25. **DISC**
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.
26. **NOTE TO CATV SYSTEM INSTALLER**
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE


ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT (NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS (NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM (NEC ART 250, PART H)

NEC-NATIONAL ELECTRICAL CODE
S2898A

Power source



Polarized AC Cord Plug
(One blade is wider than the other.)

TO USE AC POWER SOURCE
Use the AC polarized line cord provided for operation on AC. Insert the AC cord plug into a standard 120V 60Hz polarized AC outlet.

Notes:
- Never connect the AC line cord plug to other than the specified voltage (120V 60Hz). Use the attached power cord only.
- If the polarized AC cord does not fit into a non-polarized AC outlet, do not attempt to file or cut the blade. It is the user's responsibility to have an electrician replace the obsolete outlet.
- If you cause a static discharge when touching the unit and the unit fails to function, simply unplug the unit from the AC outlet and plug it back in. The unit should return to normal operation.

Precautions

Notes on handling

- When shipping the DVD/VCR, the original shipping carton and packing materials come in handy. For maximum protection, repack the unit as it was originally packed at the factory.
- Do not use volatile liquids, such as insect spray, near the DVD/VCR. Do not leave rubber or plastic products to contact the DVD/VCR for a prolonged period. They will leave marks on the finish.
- The top and rear panels of the DVD/VCR may become warm after a long period of use. This is not a malfunction.
- When the DVD/VCR is not in use, be sure to remove the disc and the video cassette turn off the power.
- If you do not use the DVD/VCR for a long period, the unit may not function properly in the future. Turn on and use the DVD/VCR occasionally.

Notes on locating

- Place the DVD/VCR on a level surface. Do not use it on a shaky or unstable surface such as a wobbling table or inclined stand. The loaded disc or the video tape may become dis-aligned and damage the DVD/VCR.
- When you place this DVD/VCR near a TV, radio, or VCR, the playback picture may become poor and the sound may be distorted. In this case, place the DVD/VCR away from the TV, radio, or VCR.

Notes on cleaning

Use a soft, dry cloth for cleaning.
- For stubborn dirt, soak the cloth in a weak detergent solution, wring well and wipe. Use a dry cloth to wipe it dry.
Do not use any type of solvent, such as thinner and benzine, as they may damage the surface of the DVD/VCR.
- If you use a chemical saturated cloth to clean the unit, follow that product's instructions.

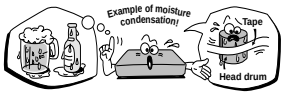
To obtain a clear picture

The DVD/VCR is a high technology, precision device. If the video head, the head drum, the optical pick-up lens or disc drive parts are dirty or worn down, the picture quality will deteriorate. To obtain a clear picture, we recommend regular inspection and maintenance (cleaning or parts replacement) every 1,000 hours of use depending on the operating environment. For details, contact your nearest dealer.

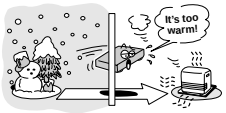
Notes on moisture condensation

Moisture condensation damages the DVD/VCR. Please read the following carefully.

Moisture condensation occurs, for example, when you pour a cold drink into a glass on a warm day. Drops of water form on the outside of the glass. In the same way, moisture may condense on the head drum or the optical pick-up lens inside this unit, one of the most crucial internal parts of the DVD/VCR.

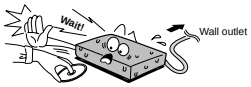


■ **Moisture condensation occurs during the following cases.**
- When you bring the DVD/VCR directly from a cold place to a warm place.
- When you use the DVD/VCR in a room where you just turned on the heater, or a place where the cold wind from the air conditioner directly hits the unit.
- In summer, when you use the DVD/VCR in a hot and humid place just after you move the unit from an air conditioned room.
- When you use the DVD/VCR in a humid place.



■ **Do not use the DVD/VCR when moisture condensation may occur.**

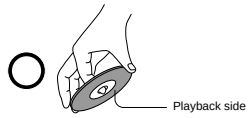
If you use the DVD/VCR in such a situation, it may damage discs and internal parts. Remove the disc or the video tape, connect the power cord of the DVD/VCR to the wall outlet, turn on the DVD/VCR, and leave it for two or three hours. After two or three hours, the DVD/VCR will have warmed up and evaporated any moisture. Keep the DVD/VCR connected to the wall outlet and moisture condensation will seldom occur.



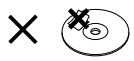
Notes on discs

On handling discs

- Do not touch the playback side of the disc.



- Do not attach paper or tape to discs.



On cleaning discs

- Fingerprints and dust on the disc cause picture and sound deterioration. Wipe the disc from the center outwards with a soft cloth. Always keep the disc clean.

- If you cannot wipe off the dust with a soft cloth, wipe the disc lightly with a slightly moistened soft cloth and finish with a dry cloth.
- Do not use any type of solvent such as thinner, benzine, commercially available cleaners or antistatic spray for vinyl LPs. It may damage the disc.

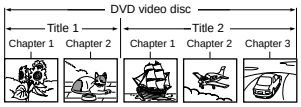
On storing discs

- Do not store discs in a place subject to direct sunlight or near heat sources.
- Do not store discs in places subject to moisture and dust such as a bathroom or near a humidifier.
- Store discs vertically in a case. Stacking or placing objects on discs outside of their case may cause warping.

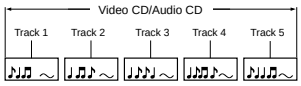
Structure of disc contents

Normally, DVD video discs are divided into titles, and the titles are sub-divided into chapters. VIDEO CDs and audio CDs are divided into tracks.

DVD video disc



Video CD/Audio CD



Each title, chapter or track is assigned a number, which is called "title number", "chapter number" or "track number" respectively.
There may be discs that do not have these numbers.

Notes on copyright

It is forbidden by law to copy, broadcast, show, broadcast on cable, play in public, and rent copyrighted material without permission.

This device does not tape-record copy protected DVD Video Discs.
The device is not to be used for copying copyrighted content without the express written permission of the copyright owner.
Obtaining such permission is the sole responsibility of the user.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Notes on discs (continued)

About this owner's manual

This owner's manual explains the basic instructions of this DVD/VCR. Some DVD video discs are produced in a manner that allows specific or limited operation during playback. As such, the DVD/VCR may not respond to all operating commands. This is not a defect in the DVD/VCR. Refer to instruction notes of discs.

"✋" may appear on the TV screen during operation. A "✋" means that the operation is not permitted by the DVD/VCR or the disc.
For example, sometimes it is unable to stop the playback of copyright message of the disc when the STOP (■) button is pressed. Alternatively, the "✋" may also indicate that the feature is not available for the disc.

Notes on region numbers

The region number of this DVD/VCR is 1. If region numbers, which stand for their playable area, are printed on your DVD video disc and you do not find (ALL) or (1), disc playback will not be allowed by the player. (In this case, the DVD/VCR will display a message on-screen.)

On Video CDs

This DVD/VCR supports Video CDs equipped with the PBC (Version 2.0) function. (PBC is the abbreviation of Playback Control.) You can enjoy two playback variations depending on types of discs.

- **Video CD not equipped with PBC function (Version 1.1)**
  Sound and movie can be played on this DVD/VCR in the same way as an audio CD.
- **Video CD equipped with PBC function (Version 2.0)**
  In addition to operation of a Video CD not equipped with the PBC function, you can enjoy playback of interactive software with search function by using the menu displayed on the TV screen (Menu Playback). Some of the functions described in this owner's manual may not work with some discs.

Playable discs

This DVD/VCR can play the following discs.

	Disc Mark	Contents	Disc Size	Maximum playback time
DVD video discs	DVD VIDEO	Audio + Video (moving pictures)	12 cm	Approx. 4 hours (single sided disc)
				Approx. 8 hours (double sided disc)
			8 cm	Approx. 80 minutes (single sided disc)
				Approx. 160 minutes (double sided disc)
Video CDs	COMPACT disc DIGITAL VIDEO	Audio + Video (moving pictures)	12 cm	Approx. 74 minutes
			8 cm	Approx. 20 minutes
Audio CDs	COMPACT disc DIGITAL AUDIO	Audio	12 cm	Approx. 74 minutes
			8 cm (CD single)	Approx. 20 minutes

The following discs are also available.
- DVD-R/RW discs of DVD video format
- CD-R/CD-RW discs of CD-DA, Video CD, SVCD, MP3, WMA or JPEG format
- Kodak Picture CD and FUJICOLOR CD format

Some of these discs may be incompatible.

- You cannot play discs other than those listed above.
- You cannot play discs of DVD-RAM, DVD-ROM, Photo CD, etc., or non standardized discs even if they may be labeled as above.
- Some CD-R/RWs can not be played back depending on the recording conditions.
- This DVD/VCR uses the NTSC color system, and cannot play DVD video discs recorded in any other color system (PAL, SECAM, etc.).

Contents

Introduction
IMPORTANT SAFEGUARDS 2
Power source 5
Precautions 6
Notes on discs 7
Contents. 9
Identification of controls 10

Connections
Antenna connections 14
CATV (CABLE TV) connections 16
Connecting to a TV 18
Connecting to optional equipment 20

Basic setup
Setting the video channel 22
Setting the language 23
Clock setting 24
Tuner setting 27

Playback (VCR)
Loading and unloading a cassette tape 29
Cassette tape playback 30
Special playback 31
Convenience function 32

Recording (VCR)
Recording a TV program 34
One-touch Timer Recording (OTR) 36
Timer recording 37

Other functions (VCR)
Stereo recording and playback 39
Second Audio Program (SAP) 39
Duplicating a video tape 40
Recording a DVD/CD disc 41

Basic playback (DVD)
Playing a disc 42

Advanced playback (DVD)
MP3/WMA/JPEG playback 45
Zooming 50
Locating desired scene 50
Marking desired scenes 51
Repeat playback 52
A-B Repeat playback 52
Program playback (CD) 53
Random playback (CD) 53
Changing angles 54
Title selection 54
DVD menu 54

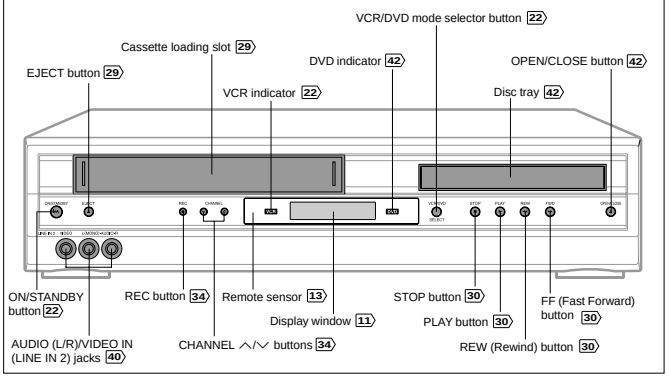
Function setup (DVD)
Changing soundtrack language 55
Setting surround sound 55
Setting subtitles 56
Karaoke playback 56
E.B.L. (Enhanced Black Level) 57
Setting the aspect ratio of TV screen 58
Setting on screen display 59
Status display of disc 59
Dynamic Range Control 60
Parental control setting 61
To change the parental level 62
Temporary disabling of rating level by DVD disc .. 63
Setting OSD language 64
Setting language 65
Selecting PROGRESSIVE scan 66

Others
Language code list 67
Before calling service personnel 68
Specifications 69
LIMITED WARRANTY 70

Identification of controls

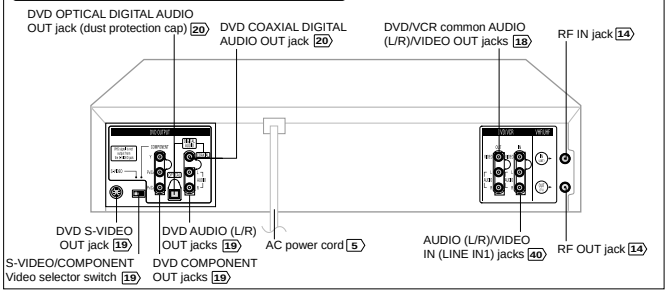
See the page in ▭ for details.

Front panel

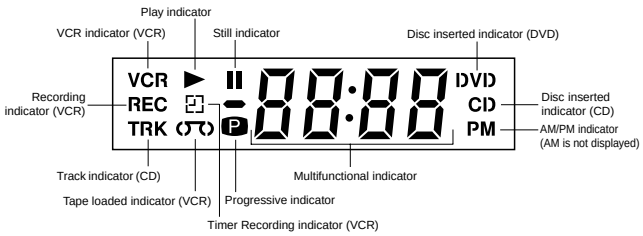


Rear panel

When connecting the optical digital cable, remove the cap and fit the connector into the jack firmly. When not using the jack, keep the cap inserted to protect it from dust intrusion.

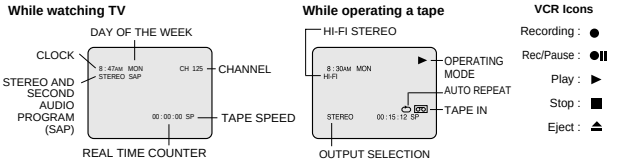

DVD OPTICAL DIGITAL AUDIO OUT jack (dust protection cap) 20
DVD COAXIAL DIGITAL AUDIO OUT jack 20
DVD/VCR common AUDIO (L/R)/VIDEO OUT jacks 18
RF IN jack 14
DVD S-VIDEO OUT jack 19
DVD AUDIO (L/R) OUT jacks 19
AC power cord 5
AUDIO (L/R)/VIDEO IN (LINE IN1) jacks 40
RF OUT jack 14
S-VIDEO/COMPONENT Video selector switch 19
DVD COMPONENT OUT jacks 19

Display window



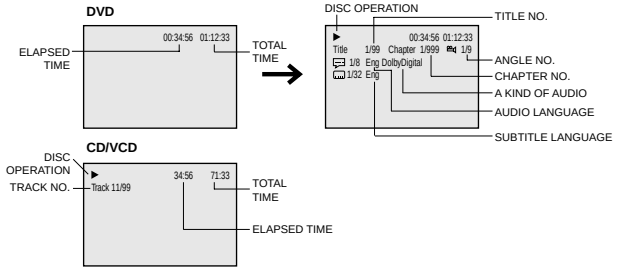
VCR operation status

Press **CALL** to display information on screen.
To cancel the display, press **CALL** again.



DVD/CD/VCD operation status

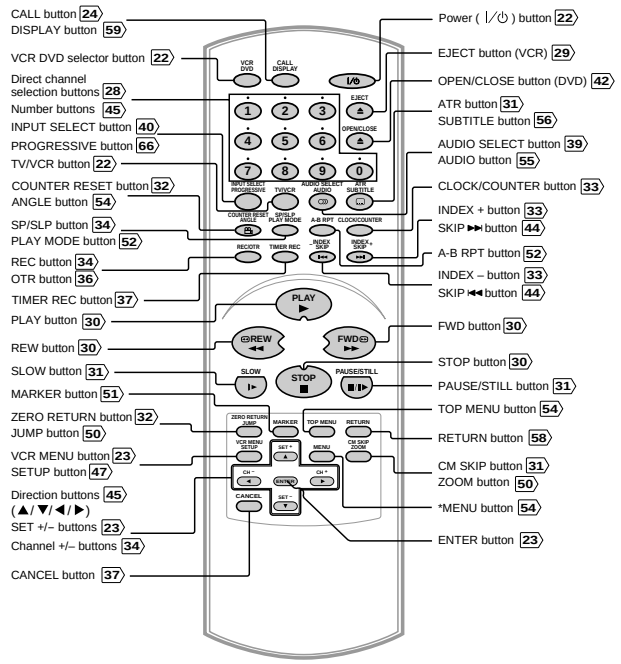
Each press of **DISPLAY**, the status display of the disc will appear on the screen and change as follows.



Identification of Controls (continued)

The instructions in this manual describe the functions on the remote control. See the page in ☐ for details.

Remote control



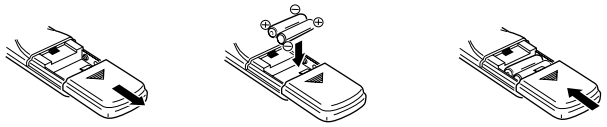
*** MENU button**
Use the MENU button to display the menu included on many DVD video discs. To operate a menu, follow the instructions in "DVD Menu." 54

Inserting Batteries

1 Slide the battery compartment cover in the direction of the arrow.

2 Install two "AAA" batteries (supplied), paying attention to the polarity diagram in the battery compartment.

3 Replace the compartment cover.



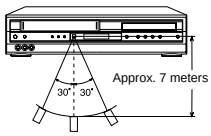
Battery precautions

The precautions below should be followed when using batteries in this device:
1. Use only the size and type of batteries specified.
2. Be sure to follow the correct polarity when installing the batteries as indicated in the battery compartment. Reversed batteries may cause damage to the device. To avoid a potential short circuit, insert the "–" end first.
3. Do not mix different types of batteries together (e.g. Alkaline and Carbon-zinc) or old batteries with fresh ones.
4. If the device is not to be used for a long period of time, remove the batteries to prevent damage or injury from possible battery leakage.
5. Do not try to recharge batteries not intended to be recharged; they can overheat and rupture. (Follow battery manufacturer's directions.)

Remote control basics

- Press **POWER (I/⏻)** to turn the DVD VCR on or off.
- Select your desired operating mode (DVD or VCR) using **VCR DVD**. (DVD or VCR indicator on the front panel will show you which mode is selected.)
- Press **CH +** or **CH –** to move through the channels one channel at a time.
- The **CH +/– (◀/▶)** and **SET +/– (▲/▼)** are also used to navigate on-screen menu system.
- You can directly access specific channels using **Number buttons**.
- Each press of **VCR DVD** on the remote control, switches the screen between the VCR screen (VCR mode) and the DVD screen (DVD mode).

Operation
- Aim the remote control at the remote sensor and press control buttons to operate.
- Operate the remote control within 30° angle on either side of the remote sensor, up to a distance of Approx. 7 meters.



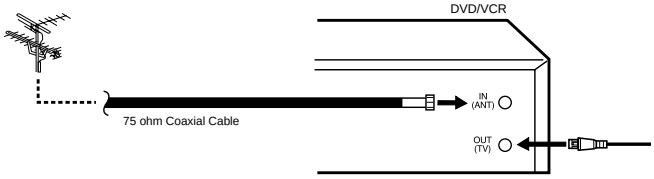
Antenna connections

If you are using an antenna system, follow these instructions. If you are a cable (CATV) subscriber, skip ahead to page 16 for the proper connections.

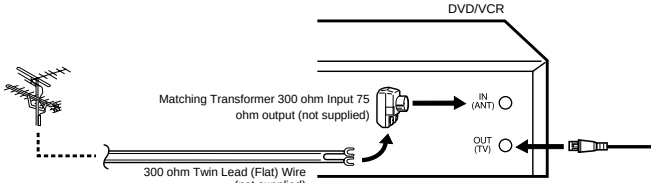
Antenna to DVD/VCR connection

The DVD/VCR must be connected "between" the antenna and the TV. First, disconnect the antenna from the TV and connect it to the DVD/VCR. Then connect the DVD/VCR to the TV. Below are 3 common methods of connecting an antenna system to a DVD/VCR. Find the type of antenna system you are using and follow the connection diagram.

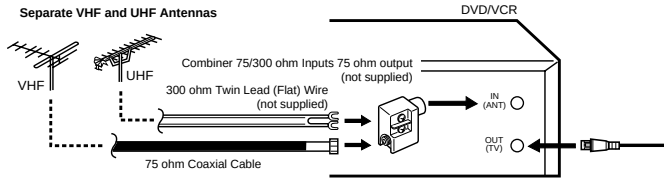
1 **Combination VHF/UHF Antenna with 75 ohm Coaxial Cable**



2 **Combination VHF/UHF Antenna with 300 ohm Twin Lead (Flat) Wire**


DVD/VCR
Matching Transformer 300 ohm Input 75 ohm output (not supplied)
IN (ANT)
OUT (TV)
300 ohm Twin Lead (Flat) Wire (not supplied)

3 **Separate VHF and UHF Antennas**



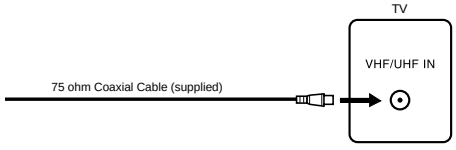
Note: If both VHF and UHF antennas have 300 ohm twin lead (flat) wires, use a combiner having two 300 ohm inputs and one 75 ohm output.

Notes:
- A clear picture will not be obtained by the DVD/VCR unless the antenna signal is good. Connect the antenna to the DVD/VCR properly.
- For better quality recording, an indoor antenna or a telescopic antenna is not recommended. The use of an outdoor type antenna is required.
- If you are not sure about the connection, please refer to qualified service personnel.

DVD/VCR to TV connection

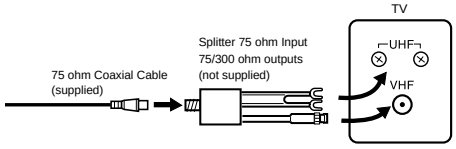
After you have connected the antenna to the DVD/VCR, you must connect the DVD/VCR to the TV.
Below are 3 common methods of connecting your DVD/VCR to a TV. Find the type of TV you are using and follow the connection diagram.

This DVD/VCR has a single 75 ohm output for connection to a TV. If your TV has separate VHF and UHF antenna inputs (numbers 2 and 3 below), use a splitter to connect the DVD/VCR to the TV for VHF and UHF reception.



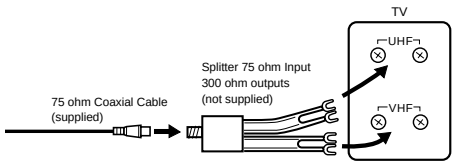
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with single 75 ohm VHF/UHF antenna input



Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHF and 75 ohm VHF antenna inputs



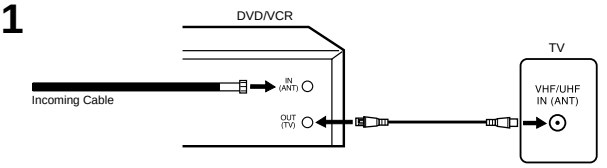
Note: **If a VHF or UHF antenna is used, set the TV/CATV menu option to the "TV" mode.**

TV with 300 ohm UHF and 300 ohm VHF antenna inputs

CATV (CABLE TV) connections

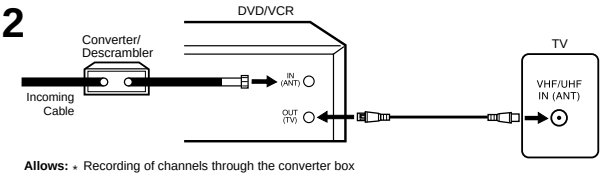
Many cable companies offer services permitting reception of extra channels including pay or subscription channels. This DVD/VCR has an extended tuning range and can be tuned to most cable channels without using a cable company supplied converter box, except for those premium channels which are intentionally scrambled. If you subscribe to a premium channel which is scrambled, you must have a descrambler box for proper reception.

1



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording of one channel while watching another.

2

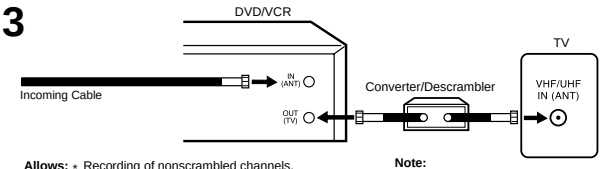


Allows:
- Recording of channels through the converter box (scrambled and unscrambled).
- Using the programmable timer to record only the channel selected at the converter box.

Prevents:
- Recording one channel while watching another.
- Using the DVD/VCR tuner to select channels.

Note:
To record from converter/descrambler, DVD/VCR tuner must be tuned to the converter output channel, usually channel 3 or 4.

3



Allows:
- Recording of nonscrambled channels.
- Use of the programmable timer.
- Recording an unscrambled channel while watching any channel selected at the converter box.

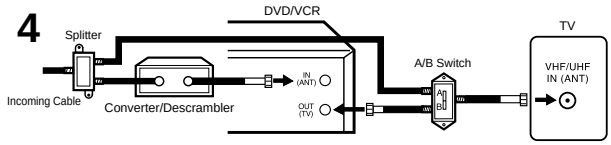
Prevents: Recording scrambled channels.

Note:
If you are playing a tape or using the tuner built into the DVD/VCR, the converter must be set to the video channel output of the DVD/VCR (either 3 or 4).

Note: Whenever a Converter/Descrambler box is placed before the DVD/VCR, you must tune the DVD/VCR to the output of the Converter/Descrambler box, usually channel 3 or 4.

IMPORTANT: Make sure the TV/CATV menu option is set to the "CATV" mode.
This DVD/VCR cannot receive scrambled programs since it does not contain a descrambler. In order to receive scrambled programs, your existing descrambler must be used. Descrambler boxes are available from cable companies. Consult your local cable company for more information concerning connection to their descrambler equipment. There are many ways to connect your DVD/VCR to a cable system. Below are six common methods of connection.

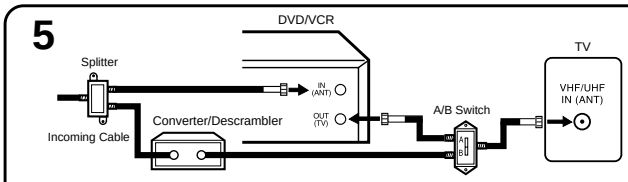
4



Allows:
- Recording of one channel while watching another.
- Using the programmable timer to record only the channel selected at the converter box.
- Recording of all channels through the converter box.

Prevents:
- Watching scrambled channels while recording another channel.
- Using the DVD/VCR tuner to select channels.

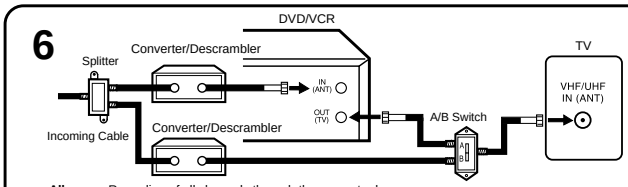
5



Allows:
- Recording of nonscrambled channels.
- Recording of one channel while watching another.
- Watching premium channels through the converter while recording nonscrambled channels.
- Using the programmable timer.

Prevents: Recording scrambled channels.

6



Allows:
- Recording of all channels through the converter box.
- Recording a scrambled or unscrambled channel while watching another (scrambled or unscrambled) channel.
- Using the programmable timer to record only the channel selected at the converter box.

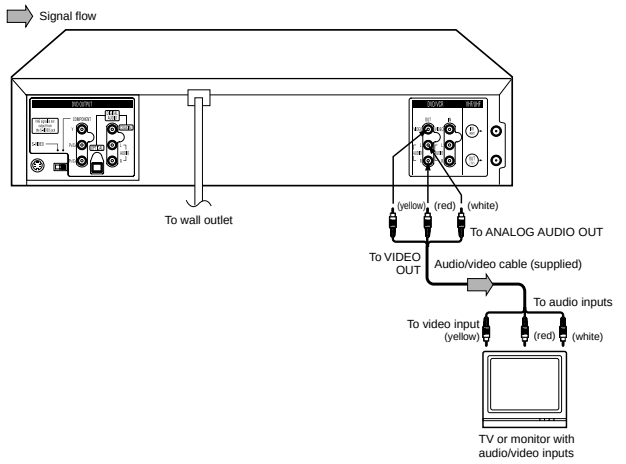
Prevents: Using the DVD/VCR tuner to select channels.

Connecting to a TV

Connect the DVD/VCR to your TV.

Note: This method transports VHS and DVD-video signals. For enhanced DVD-video performance, we recommend you also connect the S-video or ColorStream® component video outputs to your TV/monitor. (See page 19.)

Connecting to a TV



Notes:
- Refer to the owner's manual of the connected TV as well.
- When you connect the DVD/VCR to your TV, be sure to turn off the power and unplug both units from the wall outlet before making any connections.
- If your television set has one audio input, connect the left and right audio outputs of the DVD/VCR to a Y cable adapter (not supplied) and then connect to your TV.
- Connect the DVD/VCR directly to your TV. If you connect the DVD/VCR to a VCR, TV/VCR combination or video selector, the playback picture may be distorted as DVD video discs are copy protected.

S-video output/input
An S-Video connection is superior to Video (Yellow) output. Use this method for DVD playback when the connected television has S-Video input, and does not have component video inputs.

Component video outputs/inputs

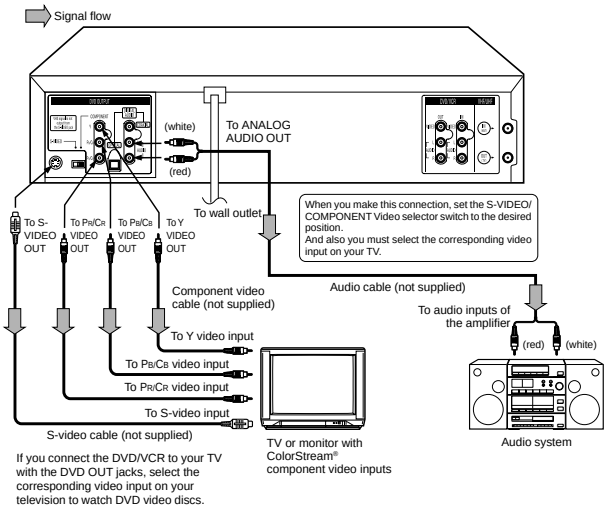
PROGRESSIVE outputs/inputs
Some TVs or monitors are equipped with component video inputs that are capable of reproducing a progressively scanned video signal. Connenting to these inputs allows you to view the highest quality pictures with less flicker.

INTERLACED outputs/inputs
Some TVs or monitors are equipped with component video inputs. Connecting to these inputs allows you to enjoy the highest quality DVD picture playback.

Notes:
- Actual labels for component video inputs may vary depending on the TV manufacturer. (ex. Y, R-Y, B-Y or Y, CB, CR)
- In some TVs or monitors, the color levels of the playback picture may be reduced slightly or the tint may change. In such a case, adjust the TV or monitor for optimum performance.

Connecting to an audio system and TV equipped with S-video input/component video inputs

Note: The S-video output and component video output transports the DVD-video signal exclusively and will deliver enhanced DVD video picture performance.


Signal flow
(white)
(red)
To ANALOG AUDIO OUT
To wall outlet
To S-VIDEO OUT
To PR/CR VIDEO OUT
To PB/CB VIDEO OUT
To Y VIDEO OUT
When you make this connection, set the S-VIDEO/ COMPONENT Video selector switch to the desired position.
And also you must select the corresponding video input on your TV.
Audio cable (not supplied)
Component video cable (not supplied)
To audio inputs of the amplifier
(red)
(white)
To Y video input
To PB/CB video input
To PR/CR video input
To S-video input
S-video cable (not supplied)
TV or monitor with ColorStream® component video inputs
Audio system

If you connect the DVD/VCR to your TV with the DVD OUT jacks, select the corresponding video input on your television to watch DVD video discs.

Notes:
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- If you place the DVD/VCR near a tuner or radio, the radio broadcast sound might be distorted. In this case, place the DVD/VCR away from the tuner and radio.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.
- **When connecting to a TV using the Video or S-video jack, make sure that the Progressive indicator "P" on the display window is not lit. If it is lit, the Video and S-video outputs do not feed the correct signals and you cannot see any picture. To turn off the Progressive indicator, select PROGRESSIVE scan Off (see page 66).**

Connecting to optional equipment

You can enjoy high quality dynamic sounds of DVD video discs or audio CDs by connecting the DVD/VCR to optional audio equipment.

For connection to your TV, see "Connecting to a TV" 18 19.

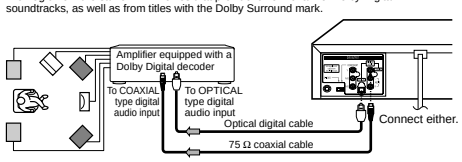
: Front speaker : Center speaker
: Rear speaker ⇨ : Signal flow
: Sub woofer

Connecting to an amplifier equipped with a Dolby Digital decoder

Dolby Digital
Dolby Digital is the surround sound technology used in theaters showing the latest movies, and is now available to reproduce this realistic effect in the home. You can enjoy motion picture and live concert DVD video discs with this dynamic realistic sound by connecting the DVD/VCR to a 6 channel amplifier equipped with a Dolby Digital decoder or Dolby Digital processor. If you have a Dolby Pro Logic Surround decoder, you will obtain the full benefit of Pro Logic from the same DVD movies that provide full 5.1-channel Dolby Digital soundtracks, as well as from titles with the Dolby Surround mark.

Manufactured under license from Dolby Laboratories. "Dolby" "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.

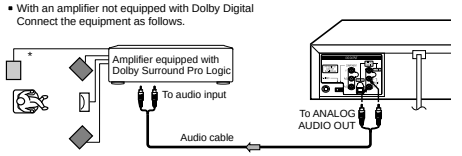
- Use DVD video discs encoded via the Dolby Digital recording system.


Amplifier equipped with a Dolby Digital decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Connecting to an amplifier equipped with Dolby Surround Pro Logic

Dolby Surround Pro Logic
You can enjoy the dynamic realistic sound of Dolby Surround Pro Logic by connecting an amplifier and speaker system (right and left front speakers, a center speaker, and one or two rear speakers).

- With an amplifier equipped with Dolby Digital
  Connect the equipment the same way as described in "Connecting to an amplifier equipped with a Dolby Digital decoder." Refer to that amplifier's owner's manual and set the amplifier so you can enjoy Dolby Surround Pro Logic sound.
- With an amplifier not equipped with Dolby Digital
  Connect the equipment as follows.



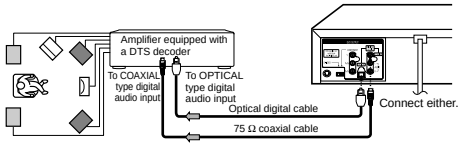
* Connect one or two rear speakers. The output sound from the rear speakers will be monaural even if you connect two rear speakers.

Connecting to an amplifier equipped with a DTS decoder

Digital Theater Systems (DTS)
DTS is a high quality surround technology used in theaters and now available for home use, on DVD video discs or audio CDs.
If you have a DTS decoder or processor, you can obtain the full benefit of 5.1 channel DTS encoded sound tracks on DVD video discs or audio CDs.

"DTS" and "DTS Digital Surround" are trademarks of Digital Theater Systems, Inc.

- Use DVD video discs or audio CDs encoded via the DTS recording system.

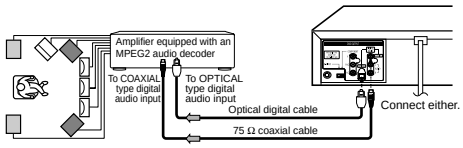

Amplifier equipped with a DTS decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Warning
When playing DTS-encoded discs (audio CDs), excessive noise may be output from the analog stereo jacks. To avoid possible damage to the audio system, you should take proper precautions when the ANALOG AUDIO OUT (L/R) jacks of the DVD/VCR are connected to an amplification system. (Do not leave the ANALOG AUDIO OUT (L/R) wires dangling.) To enjoy DTS Digital Surround™ playback, an external 5.1 channel DTS Digital Surround™ decoder system must be connected to the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.

Connecting to an amplifier equipped with an MPEG2 audio decoder

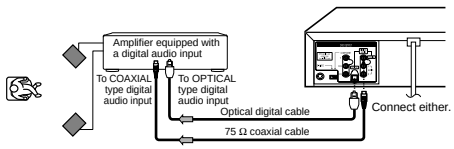
MPEG2 sound
You can enjoy motion picture and live concert DVD video discs with dynamic realistic sound by connecting an amplifier equipped with an MPEG2 audio decoder or MPEG2 audio processor.

- Use DVD video discs encoded via the MPEG2 recording system.


Amplifier equipped with an MPEG2 audio decoder
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Connecting to an amplifier equipped with a digital audio input

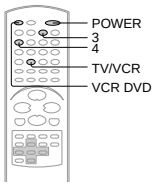
2 channel digital stereo
You can enjoy the dynamic sound of 2 channel digital stereo by connecting an amplifier equipped with a digital audio input and speaker system (right and left front speakers).


Amplifier equipped with a digital audio input
To COAXIAL type digital audio input
To OPTICAL type digital audio input
Optical digital cable
75 Ω coaxial cable
Connect either.

Notes:
- DO NOT connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the AC-3 RF input of a Dolby Digital Receiver. This input on your A/V Receiver is reserved for Laserdisc use only and is incompatible with the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR.
- Connect the BITSTREAM/PCM AUDIO OUT jack of the DVD/VCR to the "OPTICAL" or "COAXIAL" input of a Receiver or Processor.
- Refer to the owner's manual of the connected equipment as well.
- When you connect the DVD/VCR to other equipment, be sure to turn off the power and unplug all of the equipment from the wall outlet before making any connections.
- The output sound of the DVD/VCR has a wide dynamic range. Be sure to adjust the receiver's volume to a moderate listening level. Otherwise, the speakers may be damaged by a sudden high volume sound.
- Turn off the amplifier before you connect or disconnect the DVD/VCR's power cord. If you leave the amplifier power on, the speakers may be damaged.

Setting the video channel

When a TV is connected with the 75 ohm coaxial cable only.
To view playback of a recorded tape or DVD disc, or to watch a program selected by the VCR's channel selector, the TV must be set to channel 3 or 4 (video channel).

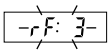


Setting the video channel

1 Press and hold 3 or 4 on the remote for 3 seconds in standby mode.

3 OR 4

The video channel will start to flash for 3 seconds in the display window.



2 Press POWER to turn on the DVD/VCR.

I/⏻

3 Press VCR DVD selector to select the VCR mode.

VCR DVD

The VCR indicator on the front panel will light.

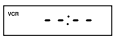
VCR

4 Turn ON the TV and set to CH 3 or 4 to correspond with the channel selected in step 1.

5 Press TV/VCR to select the VCR position.

TV/VCR

The VCR indicator will appear in the display window.



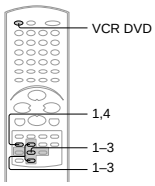
6 Select any channel to receive a TV station in your area. The channel number will appear on the screen for about 4 seconds.

■For a push-button TV tuner
If CH 3 or 4 corresponding to the video channel cannot be tuned on your TV, proceed as follows: set the VCR 3/4 channel selector and the TV to CH 3 or 4, play back a prerecorded tape and tune the TV to receive a sharp color picture from the video cassette recorder. Refer to your TV owner's manual for details.

Note:
If the unit does not operate properly, or No key operation (by the unit and/or the remote control): Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.

Setting the language

You can choose from three different languages (English, French and Spanish) for the on-screen displays.



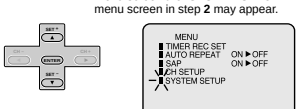
Setting the language

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

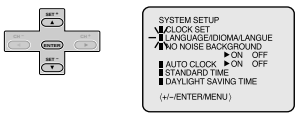
1 Press VCR MENU.

VCR MENU SETUP

The VCR menu screen will appear. Press **SET +** or **–** to select "SYSTEM SETUP", then press **ENTER**.
If you use the unit for the first time and press **VCR MENU**, instead of the main menu screen the "SYSTEM SETUP" menu screen in step **2** may appear.



2 Press SET + or – to select "LANGUAGE", then press ENTER.



3 Press SET + or – to select the desired language: English (ENGLISH), Spanish (ESPAÑOL) or French (FRANCAIS), then press ENTER.

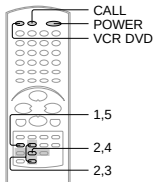
4 Press VCR MENU until the MENU screen is cleared.

VCR MENU SETUP

Notes:
- Both the VCR and the DVD have their own player menus 57.
- If no buttons are pressed for more than 60 seconds, the VCR MENU screen will return to normal TV-operation automatically.

Clock setting

The AUTO CLOCK function will automatically set the built-in clock (Month, Day, Year and Time) when the DVD/VCR is connected to an Antenna or Cable system and it is turned off. The DVD/VCR searches for a station in your area containing the necessary AUTO CLOCK setting signals. Once received, it will take approximately 4 minutes for the clock to set itself automatically.



AUTO CLOCK setting

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Connect the Antenna or Cable system.**
- If you use a cable box, turn it on.

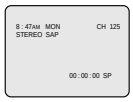
2 **Plug the AC Power cord to the AC outlet.**

3 **Make sure the DVD/VCR is turned off.**
- If you press **POWER**, the Auto Clock set is not programmed.

4 **Wait at least three minutes and press POWER.**

5 **Press CALL to check the clock setting on the on screen display.**

CALL DISPLAY



6 **If the clock is not set, check the antenna condition. The AUTO CLOCK may not function properly if the reception condition is not good.**

AUTO CLOCK adjustment

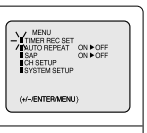
The auto clock adjustment will be updated at 6:00 AM, 12:00 PM and 6:00 PM everyday when the DVD/VCR turned off.
- If you use a cable box and you want AUTO CLOCK adjustment to be performed, the cable box must be left on.
- The AUTO CLOCK adjustment is not effective when there is a difference of more than 5 minutes exists between the built-in clock time and the actual time.

To set AUTO CLOCK to off

When shipped from factory the AUTO CLOCK is set to "ON". But if you do not want AUTO CLOCK setting:

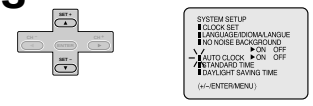
1 **Press VCR MENU.**

VCR MENU SETUP

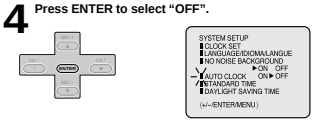


2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**

3 **Press SET + or – to select "AUTO CLOCK".**



4 **Press ENTER to select "OFF".**



5 **Press VCR MENU repeatedly to return to the normal screen.**

VCR MENU SETUP

- When the AUTO CLOCK is set to "OFF", the AUTO CLOCK adjustment does not function.
- Set the clock manually (26).

To set STANDARD TIME

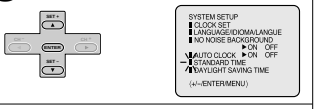
In the rare event that you live within broadcast range of two stations in two different time zones, the DVD/VCR may recognize the wrong station for the AUTO CLOCK setting. To correct the situation:

1 **Press VCR MENU.**

VCR MENU SETUP

2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**

3 **Press SET + or – to select "STANDARD TIME", then press ENTER.**



4 **Press SET + or – to select your time zone, then press ENTER.**

ATLANTIC	: GMT–4hours
EASTERN	: GMT–5hours
CENTRAL	: GMT–6hours
MOUNTAIN	: GMT–7hours
PACIFIC	: GMT–8hours
ALASKA	: GMT–9hours
HAWAII	: GMT–10hours
AUTO	: AUTO SET

(GMT: Greenwich Mean Time)

5 **Press VCR MENU twice to return to the normal screen.**

VCR MENU SETUP

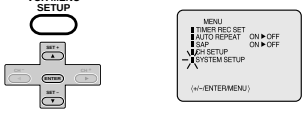
Notes:
- To be able to select the standard time, the clock must first be set by AUTO CLOCK once.
- If you live in Newfoundland and the AUTO CLOCK does not function properly, set the AUTO CLOCK menu option to "OFF" and set the clock manually.

To set DAYLIGHT SAVING TIME

You can set the DAYLIGHT SAVING TIME automatically or manually.

1 **Press VCR MENU. Press SET + or – to select "SYSTEM SETUP", then press ENTER.**

VCR MENU SETUP



2 **Press SET + or – to select "DAYLIGHT SAVING TIME", then press ENTER.**

3 **Press SET + or – to select one of the options, then press ENTER. Press VCR MENU until the MENU screen is cleared.**

VCR MENU SETUP

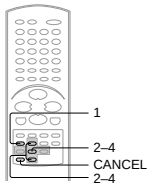
ON: for manual setting (forward one hour)
OFF: for manual setting (back one hour)
AUTO: for automatic setting (read XDS in the signal)

When you want to set the DAYLIGHT SAVING TIME manually, on the first Sunday in April you set to "ON", and on the last Sunday in October you set to "OFF".

Notes:
- When shipped from factory, the DAYLIGHT SAVING TIME is set to "AUTO" position.
- When the clock is not set, DAYLIGHT SAVING TIME setting is not available.
- When there is no DAYLIGHT SAVING TIME in your area, always select "OFF" position in step 3.

Clock setting (continued)

If the AUTO CLOCK process did not set the date and time correctly, you must set them manually for timer recording and DAYLIGHT SAVING TIME.



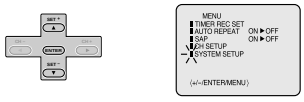
Manual clock Setting

EXAMPLE: Setting the clock to "8:30 AM" March, 27 (SAT), 2004.

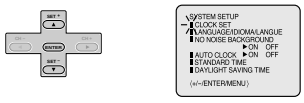
1 **Press VCR MENU.**

VCR MENU SETUP

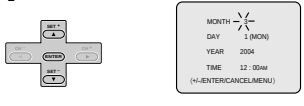
2 **Press SET + or – to select "SYSTEM SETUP", then press ENTER.**



3 **Press SET + or – to select "CLOCK SET", then press ENTER.**



4 **Press SET + or – to set the month, then press ENTER.**



5 **Set the day, year and time as in step 4.**

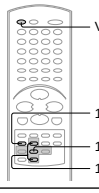
6 **After setting the clock, date and time starts functioning automatically.**

■ **To make corrections any time during the process**
Press **CANCEL** repeatedly until the item you want to change blinks, then press **SET +** or **–**.

Note:
After a power failure or disconnection of the power, the timer settings will be lost. In this case, reset the present time.

Tuner setting

This DVD/VCR is equipped with a channel memory feature which allows channels to skip up or down to the next channel set into memory, skipping over unwanted channels. Before selecting channels, they must be programmed into the DVD/VCR's memory. In addition to normal VHF and UHF channels, this DVD/VCR can receive up to 113 Cable TV channels. To use this DVD/VCR with an antenna, set the TV/CATV menu option to the TV mode. When shipped from the factory, this menu option is in the CATV mode.

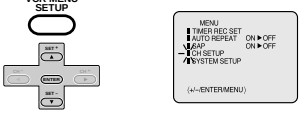


TV/CATV selection

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

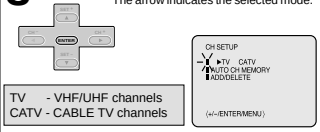
1 **Press VCR MENU. Press SET + or – to select "CH SETUP", then press ENTER.**

VCR MENU SETUP



2 **Press SET + or – to select "TV/CATV".**

3 **Press ENTER to select the TV or CATV mode.**
The arrow indicates the selected mode.



TV - VHF/UHF channels
CATV - CABLE TV channels

4 **Press VCR MENU until the menu screen is cleared.**

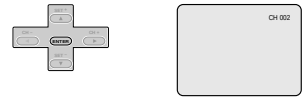
VCR MENU SETUP

Note:
You can't select "CH SETUP" if you set the channel to "L1" or "L2".

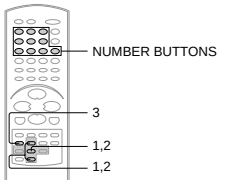
Setting channels automatically

1 **Repeat left step 1 and press SET + or – to select "AUTO CH MEMORY".**

2 **Press ENTER.**
Auto tuning will begin. The channel display will count up and when finished, the screen returns to normal.



Tuner setting (continued)



To ADD/DELETE channels

1 **Repeat the step 1 on page 27. Then press SET + or – to select the "ADD/DELETE" and press ENTER.**

2 **To Add or Delete desired channels**

1 Press **Number buttons** or **SET +** or **–** to select a channel number you want to add or delete.

2 **To add channels**
Press **ENTER** until "ADD" appears on the screen.
To delete channels
Press **ENTER** until "DELETE" appears on the screen. The channel number will blink.

3 Repeat 1 to 2 to add or delete other channel.

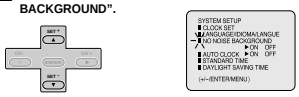
3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU SETUP

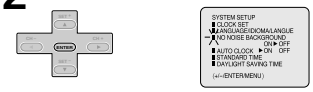
Noise elimination

When you don't want to receive a weak signal broadcast, a Blue back screen can be obtained by selecting the NO NOISE BACKGROUND "ON". When the unit is shipped from the factory, the NO NOISE BACKGROUND is set to "ON".

1 **Repeat the steps 1~2 on page 26 and press SET + or – to select "NO NOISE BACKGROUND".**



2 **Press ENTER to select "ON" or "OFF" position.**

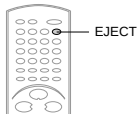


3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU SETUP

Loading and unloading a cassette tape

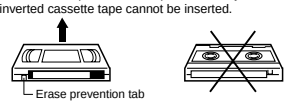
Use only video cassette tapes marked VHS and SVHS.



Loading

Push the center of the tape until it is automatically inserted.

Insert the cassette tape with its labeled side facing up and the erase prevention tab positioned at your left. An inverted cassette tape cannot be inserted.

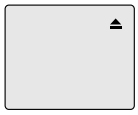


Automatic power ON
When you insert a cassette tape the DVD/VCR power will turn ON automatically.

Automatic playback
When loading a cassette tape without an erase prevention tab, playback will start automatically.

Unloading

1 Press **EJECT** on the front panel or on the Remote.

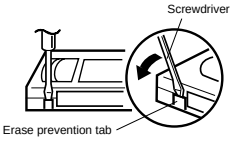


2 Remove the cassette tape.

Automatic tape eject
This DVD/VCR will automatically rewind the tape when the tape has ended. Once the tape is rewound to its beginning, the cassette tape will be ejected automatically.

To prevent accidental erasure

To prevent accidental erasure
Remove the erase prevention tab with a screwdriver.



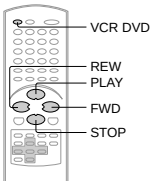
To record again
Cover the hole with a piece of adhesive tape.

Tape speed and maximum recording time

Tape Speed	Video cassette tape				
	T-160	T-120	T-90	T-60	T-30
SP (Standard Play)	2-2/3 hours	2 hours	1-1/2 hours	1 hour	30 minutes
SLP (Super Long Play)	8 hours	6 hours	4-1/2 hours	3 hours	1-1/2 hours

Cassette tape playback

To play a prerecorded tape.

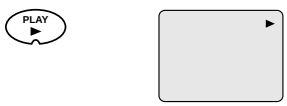


Playback

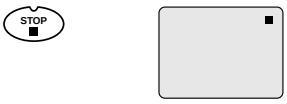
Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light).

1 **Load a prerecorded tape**
(When loading a cassette tape without the erase prevention tab, playback will start automatically).

2 **To start playback**
Press **PLAY**.
Playback will start. " ▶ " will appear on the screen for about 4 seconds.



To stop playback
Press **STOP** once.
The tape will stop but remain fully loaded and ready to play.
" ■ " will appear on the screen for about 4 seconds.

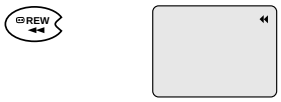


Notes:
- This VCR selects the playback tape speed SP, LP or SLP automatically.
- The Cassette tape and DVD disc can be played back simultaneously. If you press **VCR DVD** selector, the tape playback and DVD playback alternate with each other on the screen (via CH3, 4 or video connection).

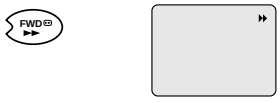
Rewind or forward the tape

Stop the playback or recording via **STOP** on remote.

To rewind the tape:
Press **REW**.



To forward the tape:
Press **FWD**.

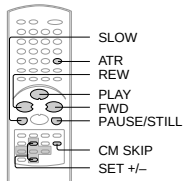


To discontinue the tape-winding, press **STOP**. To switch to playback directly (without **STOP**), press **PLAY**.

■ **Forward/Reverse picture search mode**

When the tape is being winded, you can switch to picture search mode (see next page). To do this, press **REW** or **FWD** and hold it down. The unit will resume the tape advance or rewinding as soon as the button is released.

Special playback



Picture search

Reverse picture search function
Press **REW** once or twice during playback.
Forward picture search function
Press **FWD** once or twice during playback.
To return to playback, press **PLAY**.

SPEED SEARCH TIMES

TAPE SPEED	PICTURE SEARCH SPEED	
	PRESS ONCE	PRESS TWICE
SP (Standard Play)	3 X	5 X
LP (Long Play)	7 X	9 X
SLP (Super Long Play)	9 X	15 X

Still picture

Press **PAUSE** during playback.
To resume normal playback, press **PLAY** or **PAUSE/STILL**.

Slow motion

During playback press **SLOW**.
To return to playback, press **PLAY** or **SLOW**.

■ **Slow tracking and vertical lock adjustment**
If noise bars appear in the picture during slow motion, press the **SET +/–** to reduce the noise bars.
If the still picture jitters excessively, press **SET +/–** to stabilize the still picture.

Frame by frame picture

Press **PAUSE/STILL** during playback.
Press **SLOW** repeatedly: The picture advances frame by frame.
To return to playback, press **PLAY** or **PAUSE/STILL**.

CM skip

Press **CM SKIP** during playback. The DVD/VCR will search forward through approximately 30 seconds of the tape (e.g. unwanted commercial time) for each press of **CM SKIP** (maximum six presses) and then resume normal playback.

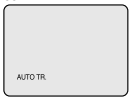
For example : 1 press: 30 seconds of tape
2 press: 60 seconds of tape
3 press: 90 seconds of tape

Adjusting tracking condition

■ **Automatic tracking adjustment**
Whenever you insert a tape and start playback, the automatic tracking feature continuously analyzes the signal to enable optimum picture quality during playback.

■ **Manual tracking adjustment**
If automatic tracking cannot eliminate noises well during playback, press **SET +/–** to eliminate the noise. "MANUAL TR." will appear on the screen. Press it briefly for a fine adjustment, or press and hold for a coarse adjustment.

Press **ATR** to reactivate automatic tracking again. "AUTO TR." will appear on the screen.



Notes:
- The audio output is muted during SPEED SEARCH, STILL, FRAME ADVANCE and SLOW MOTION.
- During picture search mode there will be noise bars. This is not a defect.
- Playback will commence after approx. 5 minutes to protect the video tape against excessive wear during pause mode.

Video head cleaning

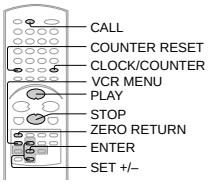
Video head clogging
■ The video heads are the means by which the DVD/VCR reads the picture from the tape during playback. In the unlikely event that the heads become dirty enough to be clogged, no picture will be displayed. This can easily be determined if, during playback of a known good tape, there is good sound, but no picture (picture is extremely snowy). If this is the case, have the DVD/VCR checked and cleaned by qualified service personnel.

Good Picture

Snowy Picture

Notes:
- DO NOT ATTEMPT TO CLEAN THE VIDEO HEADS OR SERVICE THE UNIT BY REMOVING THE REAR COVER.
- Video heads may eventually wear out and should be replaced when they fail to produce clear pictures.
- To help prevent video head clogging, use only good quality VHS tapes. Discard worn out tapes.

Convenience function



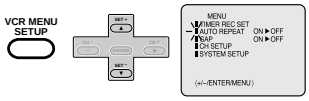
Repeat playback

The entire video tape will play until its end. The tape will automatically rewind to the beginning and the playback will be repeated.

1 **Press VCR MENU.**

Press **SET +** or **–** to select "AUTO REPEAT".

VCR MENU SETUP



2 **Press ENTER to select "ON" or "OFF".**

If "ON" is selected, the playback will be repeated endlessly.

3 **Press VCR MENU until the menu screen is cleared.**

VCR MENU SETUP

If you press **CALL**, "↺" will appear on the screen 11.

4 **To commence playback, press PLAY.**

The playback will be repeated endlessly.

PLAY

To cancel repeat mode:
Follow the above step **1**, then press **ENTER** to select "OFF" position. Press **VCR MENU** to return to the TV.

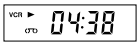
Zero return function

This function rewinds the tape to the "00:00:00" counter position automatically.

1 **Press CLOCK/COUNTER.**

The counter display shows the tape running time during playback or recording.

CLOCK/COUNTER



2 **Press COUNTER RESET at the desired tape position.**

The counter display will be reset to "00:00:00" position (e.g. the beginning of recording).

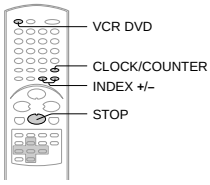
COUNTER RESET ANGLE

3 **Press STOP when playback or recording is completed.**
Press ZERO RETURN.

The tape will automatically rewind or fast forward to the "00:00:00" counter position.

STOP

ZERO RETURN JUMP



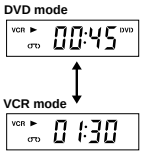
Clock/counter display

Press **CLOCK/COUNTER**. The clock and tape counter alternate with each other in the display window.

CLOCK/COUNTER

Press **VCR DVD** selector. The DVD mode and the VCR mode alternate with each other in the display.

VCR DVD



Notes:
- If you rewind the tape beyond "00:00:00", a minus sign ("–") will be displayed in front of the time.
- When you load a tape, the counter will reset to "00:00:00".
- The counter does not function on nonrecorded (blank) sections of the tape. When you rewind, fast forward or play tapes through blank sections, the counter stops.

Video index search system

This function enables you to locate the beginning of any recording made on the VCR.

Recording an INDEX mark
The Index Search function automatically records an INDEX mark on the tape whenever a recording is initiated.

Index search
Press **INDEX +** or **–** during stop or play mode.
For Succeeding programs: Press **INDEX +**.
For Preceding programs: Press **INDEX –**.
(As many as 9 index points can be accessed via this method.)
When the **INDEX +** or **–** is pressed, the unit starts searching the INDEX NO. selected and finds the portion, then playback starts automatically. To stop the Index Search, press **STOP**.

INDEX SKIP ⏮ STOP ⏭ INDEX+ SKIP

⏭ or ⏮ is displayed

INDEX NO. (up to 9)

Notes:
- When you record an INDEX mark at the very beginning of the tape, the mark may not be found.
- During INDEX search, the tape may stop and begin to play at a slightly different location.
- INDEX may not function properly with old or worn out video tapes.
- INDEX marks may not be found if it is extremely close to the point where the search began.
- In recording, if you stop recording temporarily, the INDEX mark is not recorded on the tape.

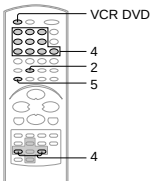
SQPB (S-VHS Quasi Playback)

You can playback video cassette tapes recorded in the S-VHS system.
However, the picture will not have the high resolution of S-VHS system.

Note: You cannot record S-VHS video format with this VCR.

Recording a TV program

Recording and viewing the same TV program.

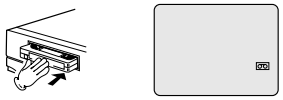


Recording a TV program

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

1 **Load a cassette tape with the erase prevention tab intact.**

The DVD/VCR will automatically turn on.



2 **Press SP/SLP to select the desired tape speed SP or SLP.**

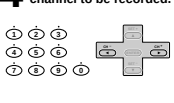
The tape counter and "SP" or "SLP" will appear on the screen for about 4 seconds.

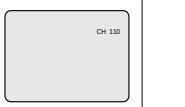
SP/SLP PLAY MODE

3 **Select "TV" or "CATV" to the appropriate position 27.**

TV - VHF/UHF channels
CATV - CABLE TV channels

4 **Press Number button or CH +/– to select the channel to be recorded.**





TV mode direct channel selection:
All channels can be instantly selected by using two buttons. (for example, to select channel 2, press "0", then "2". If you press only "2", channel selection will be delayed for two seconds.) For channels 10 and above, press the 2 digits in order.

CATV mode direct channel selection:

1-9	Press **0** twice and then **1-9** as required. Example: To select "2", Press **002**.
10-12	Press **0** first and then the remaining 2 digits in order from left to right. Example: Press **012** for "12".
13-99	Press 2 digits in order. Example: Press **22** for "22".
100-125	Press the 3 digits in order. Example: Press **110** for "110".

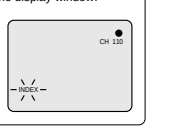
VHF/UHF/CATV CHANNELS

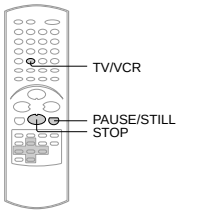
TV	CATV
VHF 2-13	VHF 2-13
UHF 14-69	STD/HRC/IRC 14-36 (A) (W) 37-59 (AA) (WW) 60-85 (AAA) (ZZZ) 86-94 (86) (94) 95-99 (A-5) (A-1) 100-125 (100)(125) 01 (5A)

5 **Press REC.**

" ● " will appear on the screen for about 4 seconds and "REC" will appear on the display window.

REC/OTR





To stop recording

Press STOP to stop recording.

STOP

" ■ " will appear on screen for about 4 seconds.

■ Auto Rewind feature
This VCR will automatically rewind the tape when the tape has ended (except during OTR and timer recording). It will also eject the tape.

To stop recording temporarily

Press PAUSE/STILL to avoid recording unwanted material. Press again to continue the recording.

PAUSE/STILL

" ●II " will appear on screen for about 4 seconds.

Notes:
- The pause function will be released after 5 minutes to prevent damage to the tape or the VCR. The VCR will change to the STOP mode.
- You can select a recording channel in the recording pause mode.

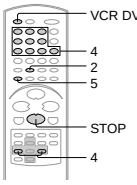
Recording one program while watching another

While the VCR is recording, select your desired channel on the TV.
When a TV is connected with an antenna cable only, press TV/VCR to select the TV position.
The "VCR" display will go off and recording will continue.
Select the TV channel you want to watch by using the TV channel selector.

Note:
Some CATV hookups do not permit viewing one channel while recording another. See pages 16 and 17.

One-touch Timer Recording (OTR)

The One-touch Timer Recording feature provides a simple and convenient way to make a timed recording.



One-touch Timer Recording (OTR)

Preparation:
- Turn ON the TV and select to the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)

Example: One-touch Timer Recording for 30 minutes.

1 **Load a cassette tape with the erase prevention tab intact.**

The VCR will automatically turn on.

2 **Press SP/SLP to select the desired tape speed SP or SLP.**

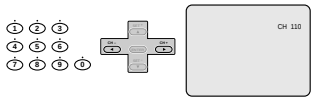
The tape counter and "SP" or "SLP" will appear on the screen for about 4 seconds.

SP/SLP
PLAY MODE

3 **Set "TV" or "CATV" option to the appropriate position** 27**.**

TV - VHF/UHF channels
CATV - CABLE TV channels

4 **Press Number button or CH +/– to select the channel to be recorded.**

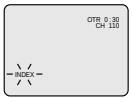


5 **Press OTR. Recording begins. Press the button again to stop recording after 30 minutes. Each additional press of OTR will increase recording time as shown in the chart below, up to a maximum of 6 hours.**

The OTR and recording time will appear on the screen for about 4 seconds. And, " ● " will appear on the display.

Press	Recording time	Press	Recording time
once	NORMAL REC	6 times	3:00
twice	0:30	7 times	4:00
3 times	1:00	8 times	5:00
4 times	1:30	9 times	6:00
5 times	2:00	10 times	NORMAL REC

REC/OTR



To cancel OTR

Press **STOP** or turn off the power.

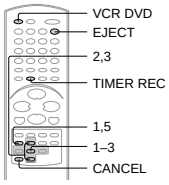
STOP

" ■ " will appear on screen for about 4 seconds.

Note:
If you wish to watch the DVD playback during OTR or standard recording, press **VCR DVD** selector to change to DVD mode and perform the DVD playback 43.

Timer recording

Timer recording can be programmed on-screen with the remote control. The built-in timer allows automatic unattended recording of up to 8 programs within 1 month.



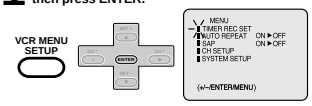
Timer recording

Preparation:
- Press **VCR DVD** selector to select the VCR mode.
- Load a cassette tape with the erase prevention tab intact.
- Check the time and date are correct 24.

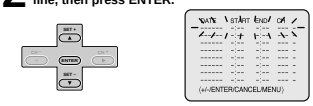
Example: Program a timer recording for the 26th day, channel 125 (CATV), 11:00 - 11:30 PM on timer program number 1 (Tape speed: SLP).

1 **Press VCR MENU. Select "TIMER REC SET", then press ENTER.**

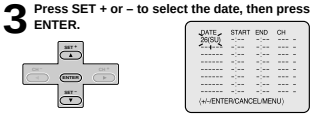
VCR MENU
SETUP



2 **Press SET + or – to select one of the program line, then press ENTER.**



3 **Press SET + or – to select the date, then press ENTER.**



4 **Set the start time, end time, channel and tape speed as in step 3.**

Notes:
- Press **CANCEL** to move cursor backward for correction.
- To record from external source set the channel to "L1" or "L2".

5 **To enter other programs, repeat step 2 through 4.**

VCR MENU
SETUP

- To return to the normal screen, press **VCR MENU** twice.

6 **Press TIMER REC. The timer symbol (⏲) will appear on the display and the VCR stands by for recording.**

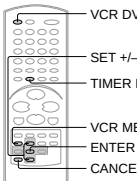
TIMER REC

At the same time, VCR mode will change to DVD mode automatically. You can use DVD even if the VCR is in the timer recording mode.
If you do not use the DVD, turn the power off.

Notes:
- The timer recording will start at 5 seconds before the time you predetermined.
- If the timer symbol(⏲) does not appear on the display in spite of the pressing of **TIMER REC**, the cassette may not have been loaded. 29
- If the cassette is ejected in spite of the pressing of **TIMER REC**, the erase prevention tab of the cassette may have been removed. 29

Notes:
- If the timer symbol (⏲) blinks when the timer recording ended, the TV program has not been completely recorded because of an insufficient tape length. Press **TIMER REC** to cancel the timer program or press **EJECT** to remove the cassette tape.
- During timer recording standby mode, the VCR mode cannot be operated. To use the VCR, press **TIMER REC** at first, then press **VCR DVD** selector to change to VCR mode. After you use the VCR, press **TIMER REC** again to put the VCR into timer recording standby mode.
- If you press **TIMER REC** during timer recording, the recording operation will be interrupted. If you press **TIMER REC** again within the programmed time, the recording operation will start again.
- After a power failure or disconnection of the power plug, all programmed recording settings and time display will be lost upon resumption of power. In this case, reset the clock 24 and reprogram any timer recording.

Timer recording (continued)

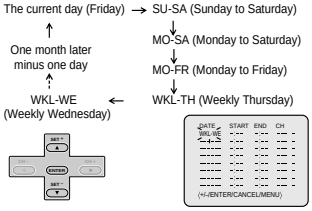


To set daily/weekly timer

Weekly (e.g. WKL-TU: each Tuesday) or daily (e.g. MO-SA: Monday to Saturday) Timer recording

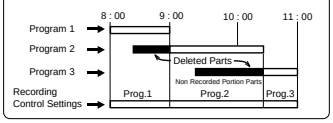
Follow the procedure of timer recording on the previous page. At step **3** press **SET +** or **–** repeatedly until the desired setting appears. Then press **ENTER**.

When you press **SET –** repeatedly, the DATE indicator will change as follows, in this case the day is Friday.


The current day (Friday)
SU-SA (Sunday to Saturday)
MO-SA (Monday to Saturday)
MO-FR (Monday to Friday)
WKL-TH (Weekly Thursday)
WKL-WE (Weekly Wednesday)
One month later minus one day

If the programs overlap another

Do not overlap timer programs as portions of the conflicting programs will be lost. The first recording time has priority over the next recording time as shown in the diagram below.



Notes:
- The daily/weekly recording can be made continuously until the recording is canceled or the tape reaches the end.
- During timer recording the automatic rewinding mechanism does not function.

To confirm or cancel a program

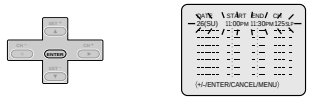
1 **If the Timer has been activated, press TIMER REC to deactivate the Timer.**

The timer symbol (⏲) will disappear. Then press **VCR DVD** selector to change to VCR mode.

TIMER REC
VCR DVD

2 **To confirm Timer program:**

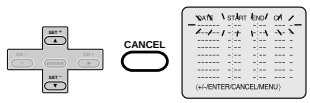
At step **1** on the previous page select "TIMER REC SET" and press **ENTER**.
The timer program list will appear on the screen.



3 **To cancel Timer program:**

Press **SET +** or **–** to select the unwanted program, then press **CANCEL** to cancel the program.

CANCEL

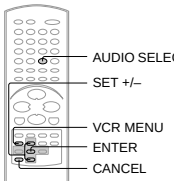


4 **Press VCR MENU repeatedly until the menu screen is cleared.**

VCR MENU
SETUP

Notes:
- If there are other timer record programs remaining, **TIMER REC** must be pressed to reactivate the timer, otherwise the remaining timer record programs will be ignored.
- You cannot confirm the Timer program during timer recording operation.
- You can correct or cancel a programmed setting in program confirm mode.

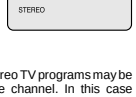
Stereo recording and playback / Second Audio Program (SAP)



Stereo recording and playback

The VHS Hi-Fi audio system permits high fidelity recording of MTS STEREO TV broadcasts.

When a MTS STEREO broadcast is received, "STEREO" will appear on the screen for about 4 seconds and the program can be viewed or recorded in stereo. The Hi-Fi stereo recording procedure is the same as for normal recordings.



Note:
When using a CATV system, stereo TV programs may be transmitted over a mono cable channel. In this case "STEREO" will not appear and the sound will be in mono.

AUDIO SELECT
AUDIO

Output selection
When viewing an MTS stereo TV program, or playing a prerecorded VHS Hi-Fi stereo videotape, press **AUDIO SELECT** to select how the audio will be heard through the speakers. Normally set to the Hi-Fi stereo position, this button can be set to the MONO position if the stereo broadcast or videotape audio is of poor quality. The "R" and "L" positions allow the audio from the Right or Left Hi-Fi channel to be heard over both TV speakers. This button has no effect when viewing a MONO videotape or TV program. Each time when you press the button, OUTPUT SELECTION display appears on the screen for several seconds. Refer to the chart below.

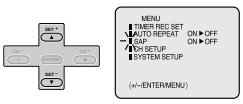
OUTPUT SELECTION	SOUND HEARD ON BOTH SPEAKERS
STEREO	STEREO
L CH	LEFT CHANNEL AUDIO
R CH	RIGHT CHANNEL AUDIO
MONO	MONO

Second Audio Program (SAP)

Your DVD/VCR is fitted with a SAP broadcast system which enables you to switch to a second audio program when viewing a selected channel.
This function applies only when the program is broadcast in multi-languages through the SAP broadcast system.

1 **Press VCR MENU. Then press SET + or – to select "SAP".**

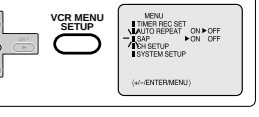
VCR MENU
SETUP



2 **Press ENTER to select "ON".**

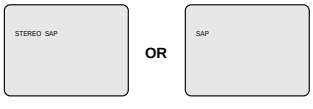
Then press **VCR MENU** until the menu screen is cleared.

VCR MENU
SETUP



Listening to SAP

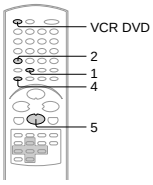
When the VCR is turned on or a channel selection is made, make certain the letters "SAP" appears on the screen for about 4 seconds. This means that the "Second Audio Program" broadcasting is available.



Notes:
- When playing back a tape that is not recorded in Hi-Fi stereo mode, the audio will automatically be monaural.
- When listening to a VHS Hi-Fi video tape or MTS broadcast through the VHF/UHF jack (Audio/Video cable not connected), the sound will be monaural.

Duplicating a video tape

If you connect the DVD/VCR to another VCR or Camcorder, you can duplicate a previously recorded tape. Make all connections before turning on the power.



Duplicating a video tape

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a previously recorded tape into the playback VCR or Camcorder.

1 Press SP/SLP to select the desired tape speed SP or SLP.

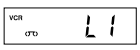
SP/SLP PLAY MODE

It is recommended that you set the tape speed to the SP mode on the recording VCR for best results.

2 Press INPUT SELECT once or twice to select AUDIO/VIDEO input position.

INPUT SELECT PROGESSIVE

"L1" or "L2" will appear in the display.



L1: on the rear panel
L2: on the front panel

3 Press PLAY on the playback VCR or Camcorder.

4 Press REC on the recording VCR.

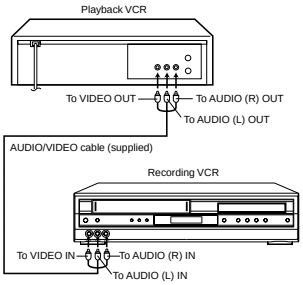
The duplicating process begins.

REC/OTR

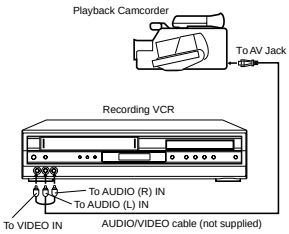
5 Press STOP after duplicating a video tape.

STOP

Connection with second VCR



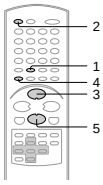
Connection with Camcorder



For duplicating a previously recorded tape from a camcorder, follow the camcorder manufacturer's instructions. A typical camcorder dubbing hookup is shown above.

Recording a DVD/CD disc

You can record disc material in DVD, Audio CD, etc. onto a Video tape with this DVD/VCR.



Duplicating a DVD or CD disc

Preparation:
- Turn ON the TV and select the corresponding video input.
- Press **VCR DVD** selector to select the VCR mode. (The VCR indicator will light.)
- Load a cassette tape with the erase prevention tab intact.
- Load a DVD/CD disc.

1 Press SP/SLP to select the desired tape speed SP or SLP.

SP/SLP PLAY MODE

2 Press VCR DVD selector to select the DVD mode.

The DVD indicator will light.

VCR DVD

DVD

3 Press PLAY to start playback.

PLAY

4 Press REC to start recording.

REC/OTR

The DVD/VCR will change to the VCR mode automatically and the playback picture or sound will be duplicated on the video cassette tape.

5 Press STOP if you finish recording.

If you wish to stop a DVD/CD disc, press **VCR DVD** selector to change the DVD mode, then press **STOP**.

STOP

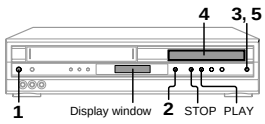
Notes:
- You may not be able to record the beginning of the disc. Begin VCR recording once program playback commences on the DVD.
- When the scanning mode is set to the progressive mode, you cannot duplicate a disc material onto a video tape. When **REC/OTR** is pressed, the PROGRESSIVE indicator "P" on the display window will flash and "Please Set P Off" will appear on the screen.
- You can not record discs encoded with copy guard function. The following icon and text will show up on the TV screen.

DISC IS COPY PROTECTED

Playing a disc

This section shows you the basics on how to play a disc.

CAUTION
Keep your fingers well clear of the disc tray as it is closing. Neglecting to do so may cause serious personal injury.



Basic playback

Preparations:
- When you want to view a disc, turn on the TV and select the corresponding video input connected to the DVD/VCR. This may include S-video or component video inputs which are exclusive to DVD playback.
- When you want to enjoy the sound of discs from the audio system, turn on the audio system and select the input connected to the DVD/VCR.

1 Press ON/STANDBY (I / ⏻).

ON/STANDBY

The DVD/VCR turns on.

2 Press VCR/DVD SELECT to select the DVD mode.

VCR/DVD SELECT

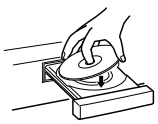
The DVD indicator will light.

3 Press OPEN/CLOSE.

OPEN/CLOSE

The disc tray opens.

4 Place the disc on the disc tray.



With the playback side down

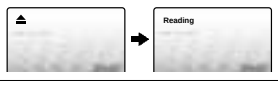
- There are two different disc sizes. Place the disc in the correct guide on the disc tray. If the disc is out of the guide, it may damage the disc and cause the DVD/VCR to malfunction.
- Do not place a disc which is unplayable in this DVD/VCR.

5 Press OPEN/CLOSE or PLAY on the unit.

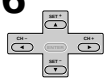
OPEN/CLOSE OR PLAY

The disc tray closes automatically. On the TV-screen, "⏏" changes to "Reading" and then playback commences.

- A menu screen will appear on the TV screen, if the disc has a menu feature.



6 Press ▲/▼ or ◀/▶ to select title.



7 Press ENTER.

- Title is selected and play commences.

8 Press STOP to end playback.

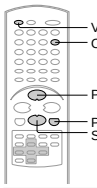
STOP

- The unit records the stopped point, depending on the disc. "■" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc (" ■ " appears on the screen.), the unit will clear the stopped point.

■ To start playback in the stop mode

Press **PLAY**.

PLAY



■ To obtain a higher quality picture

Occasionally, some picture noise not usually visible during a normal broadcast may appear on the TV screen while playing a DVD video disc because the high resolution pictures on these discs include a lot of information. While the amount of noise depends on the TV you use with this DVD/VCR, you should generally reduce the sharpness adjustment on your TV when viewing DVD video discs.

■ About DVD VCD CD

The DVD VCD CD icons on the heading bar show the playable discs for the function described under that heading.
DVD : You can use this function with DVD video discs.
VCD : You can use this function with Video CDs.
CD : You can use this function with Audio CDs and CD-R/RW CDs.

■ To pause playback (still mode)

Press **PAUSE/STILL** during playback.

PAUSE/STILL

To resume normal playback, press the PLAY button.

- The sound is muted during still mode.

■ To stop playback

Press **STOP**.

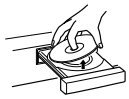
STOP

■ To remove the disc

Press **OPEN/CLOSE**.

OPEN/CLOSE

Remove the disc after the disc tray opens completely.



Be sure to press the OPEN/CLOSE button to close the disc tray after you remove the disc.

■ Playing a Disc while the VCR section is recording or standing by for timer recording

1) Start to record.
Follow steps 1~5 on page 34.
•If the DVD/VCR is standing by for recording, turn on the DVD/VCR.
2) Press VCR DVD selector to select DVD mode. The DVD indicator will light.
3) Play a disc.
Follow steps 3 ~ 5 on page 42.
•Press PLAY if the DVD/VCR does not start to play a disc automatically.
4) Stop to play.
Press STOP to stop play back a disc.

■ Screen saver function

The screen saver operates when you leave the unit in DVD stop mode for about five minutes.
The screen will repeatedly get dark gradually and back to normal.

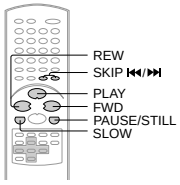
■ To turn off the PBC

Press number button 1 in the stop mode, then press ENTER.

Notes:
- If a non-compatible disc is loaded, "Incorrect Disc", "Region Code Error" or "Parental Error" will appear on the TV screen according to the type of loaded disc. In this case, check your disc again (See pages 8 and 61).
- Some discs may take a minute or so to start playback.
- When you set a single-faced disc label downwards (ie. the wrong way up) and press the OPEN/CLOSE button or the PLAY button on the unit, "Reading" will appear on the display for 30 seconds and then "Incorrect Disc" will continue to be displayed.
- Some discs may not work the resuming facility.
- Resuming cannot function when you play a PBC-featured Video CD while the PBC is on. To turn off the PBC, see above.
- Some playback operations of DVDs may be intentionally fixed by software producers. Since this unit plays DVDs according to the disc contents the software producers designed, some playback features may not be available. Also refer to the instructions supplied with the DVDs.
- Do not move the DVD/VCR during playback. Doing so may damage the disc.
- Use the OPEN/CLOSE button to open and close the disc tray. Do not push the disc tray while it is moving. Doing so may cause the DVD/VCR to malfunction.
- Do not push up on the disc tray or put any objects other than discs on the disc tray. Doing so may cause the DVD/VCR to malfunction.
- In many instances, a menu screen will appear after playback of a movie is completed. Prolonged display of an on-screen menu may damage your television set, permanently etching that image onto its screen. To avoid this, be sure to press the ON/STANDBY (I / ⏻) button on your remote control once the movie is completed.
- There may be a slight delay between you pressing the button and the function activating.

Playing a disc (continued)

You can play discs at various speeds.



Playing in fast reverse or fast forward directions

Press REW or FWD during playback.

REW ◄◄ FWD ►►

REW: Fast reverse playback
FWD: Fast forward playback

Each time you press the REW or FWD button, the playback speed changes.

■ To resume normal playback

Press **PLAY**.

PLAY ►

Notes:
- The DVD/VCR mutes sound and subtitles during reverse and forward scan of DVD video discs. However, the DVD/VCR plays sound during fast forward or fast reverse play of audio CDs.
- The playback speed may differ depending on the disc.

Playing frame by frame

Press PAUSE/STILL during still playback.

PAUSE/STILL ❚❚/II►

Each time you press the PAUSE/STILL button, the picture advances one frame.

■ To resume normal playback

Press **PLAY**.

PLAY ►

Note:
The sound is muted during frame by frame playback.

Playing in slow-motion

Press SLOW during playback.

SLOW I►

Each time you press the SLOW button, the slow-motion speed changes.

■ To resume normal playback

Press **PLAY**.

PLAY ►

Note:
The sound is muted during slow-motion playback.

Locating a chapter or track

Press SKIP I◄◄ or ►►I repeatedly to display the chapter or track number you want.

Playback starts from the selected chapter or track.

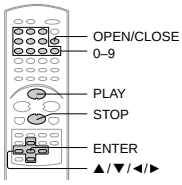
INDEX/SKIP + ►►I — To locate succeeding chapters or tracks.

INDEX/SKIP − I◄◄ — Playback starts from the beginning of the current chapter or track.
When you press twice in quick successions, playback starts from the beginning of the preceding chapter or track.

Notes:
- A "Prohibition" symbol may appear at the upper left of the screen. This symbol means either the feature you tried is not available on the disc, or the DVD/VCR can not access the feature at this time. This does not indicate a problem with the DVD/VCR.
- The unit is capable of holding a still video image or On screen display image on your television screen indefinitely. If you leave the still video image or On screen display image displayed on your TV for an extended period of time, you risk permanent damage to your television screen. Projection televisions are very susceptible.

MP3/WMA/JPEG playback

This player can play back the MP3/WMA/JPEG-data which has been recorded on CD-R or CD-RW. To produce the MP3/WMA/JPEG-data, you need a Windows-PC with CD-ROM drive and a MP3/WMA/JPEG-encoding Software (not supplied).
The Apple-HFS-System can not be played.



MP3/WMA playback

1 **Press OPEN/CLOSE.**

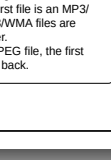
OPEN/CLOSE ⏏

The disc tray will open.
Place a disc on which MP3 or WMA files have been recorded onto the tray.

2 **Press OPEN/CLOSE or PLAY.**

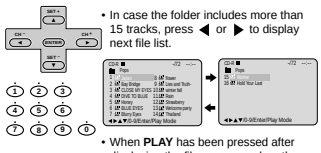
OPEN/CLOSE ⏏ PLAY ►

The disc tray closes automatically.
On the TV-screen,"Reading" will appear.
Reading will take as much time as the number of file.



3 **A file menu screen will appear on the TV screen.**
Press ◄ or ► to select folder.

4 **Press ▲/▼ or ◄/► or Number keys to select the desired file, then press ENTER.**
The file is selected and play commences.



- In case the folder includes more than 15 tracks, press ◄ or ► to display next file list.
- When **PLAY** has been pressed after displaying the file menu, or when the disc tray has been closed after pressing **PLAY** in step 2, playback begins automatically starting from the first file. In this case, if the first file is an MP3/WMA file, only MP3/WMA files are played back in order.
If the first file is a JPEG file, the first JPEG file is played back.

5 **Press STOP to end playback.**

PLAY ► STOP ■

- The unit records the stopped point. "⚑" appears on the screen. Press **PLAY** to resume playback (from the scene point).
- If you press **STOP** again or unload the disc, the unit will clear the stopped point.

MP3/WMA/JPEG CD Information

Limitations on MP3/WMA/JPEG CD playback
- MP3/WMA/JPEG CD is the disc that is standardized by ISO9660, its file name must include 3-digits extension letters, "mp3", "wma", "jpg".
- The directory and file names of the MP3/WMA/JPEG CD must be correspond to the ISO standardized files.
- This unit can read 200 files per disc. If a disc has more than 200 files, it reads up to 200 files, the remaining files will be omitted.
- The unit is able to recognize up to a maximum of 50 directories per disc.
- MP3/WMA CDs cannot be used for playback for the purpose of recording.
- If the CD has both audio tracks and MP3/WMA/JPEG files, only audio tracks are played.
- It may take more than one minute for this unit to read MP3/WMA/JPEG files depending on its structure.
- Music recorded by "Joliet Recording Specification" can be played back, the file name is displayed (within 16 letters) on the screen. Long file names will be condensed.
- The music files recorded by "Hierarchical File System" (HFS) cannot be played.
- The unit can play back baseline and progressive JPEG files.

Limitations on display
- The maximum number for display is 16 letters. Available letters for display are the following: capital or small alphabets of A through Z, numbers of 0 through 9, and _ (under score).
- Other letters than those above are replaced in hyphen.

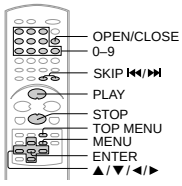
Notes on MP3/WMA/JPEG files
To play back MP3/WMA/JPEG CD in the recorded order,
1. Use MP3/WMA/JPEG software that records data alphabetically or numerically.
2. Name each file including two-digit or three-digit number (e.g. "01" "02" or "001" "002").
3. Refrain from making too many sub-folders.

WMA disc compatibility with this player is limited as follows:
1) Sampling Frequency: within 32 -- 48 kHz
2) Bit Rate: within 48 -- 192kbps.
Mono WMA files and WMA files (under 48kbps) cannot be played back on this player.

CAUTION:
- Some MP3/WMA/JPEG CDs can not be played back depending on the recording conditions.
- The CD-R/RW that has no music data or non-MP3/WMA/JPEG files can not be played back.

MP3/WMA/JPEG playback (continued)

You can select your desired JPEG file on the file menu and picture menu.
The selected JPEG file is automatically adjusted to the TV screen. (When the aspect ratio of the JPEG file is different to your TV screen, the black bar will appear at the top and bottom, or the both sides of the TV screen.



JPEG CD playback

1 **Press OPEN/CLOSE.**

OPEN/CLOSE ⏏

The disc tray will open.
Place a disc on which JPEG files have been recorded onto the tray.

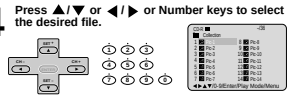
2 **Press OPEN/CLOSE or PLAY.**

OPEN/CLOSE ⏏ PLAY ►

The disc tray closes automatically.
On the TV-screen, "Reading" will appear.
Reading will take as much time as the number of file.

3 **A file menu screen will appear on the TV screen.**
Press ◄ or ► to select folder.

4 **Press ▲/▼ or ◄/► or Number keys to select the desired file.**



To display a picture menu, press MENU.
(To return to a file menu, press TOP MENU.)
Press ▲/▼ or ◄/► to select the desired file.

MENU
TOP MENU

- To display next list, press **SKIP** ►►I or I◄◄.
- When **PLAY** has been pressed after displaying the file menu, or when the disc tray has been closed after pressing **PLAY** in step 2, playback begins automatically starting from the first file. In this case, if the first file is a JPEG file, the first JPEG file is played back. If the first file is an MP3/WMA file, only MP3/WMA files are played back in order.

5 **Press ENTER.**

The selected picture appears on the TV screen.

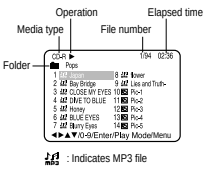
6 **Press STOP to end playback.**

STOP ■

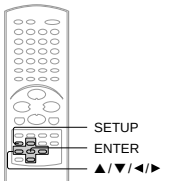
The file menu appears on the TV screen.
If you want to watch the other file, repeat steps 4–5.

Notes:
- The picture menu is displayed when the FUJICOLOR CD or the Kodak Picture CD are played. To display the file menu press **TOP MENU**.
- During MP3/WMA/JPEG-Playback, you can not use SEARCH, A-B Repeat functions.
- You can use Repeat (Track or All), Random functions and Program playback for MP3/WMA/JPEG CD Playback. (See pages 52 and 53.)
- In the case of a CD containing a mixture of MP3, WMA and JPEG files, the files are played back by selecting them from the file menu.

File menu information



: Indicates MP3 file
: Indicates WMA file
: Indicates JPEG file

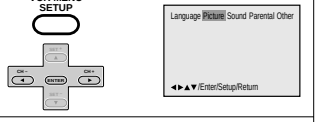


Setting the JPEG Interval

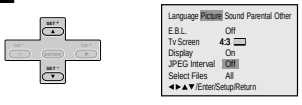
You can continuously play back all JPEG files automatically.
After the setting below, start playing the disc on which JPEG files have been recorded.

1 **Press SETUP in the stop mode. Press ◄ or ► to select "Picture", then press ENTER.**

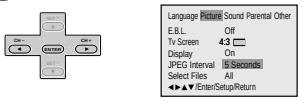
VCR MENU SETUP



2 **Press ▲ or ▼ to select "JPEG Interval".**



3 **Press ENTER or ◄/► to select your desired time.**



Off:
Plays back one file at a time.

5 Seconds:
Plays back images in the form of a slide show at 5 second intervals.

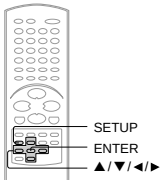
10 Seconds:
Plays back images in the form of a slide show at 10 second intervals.

15 Seconds:
Plays back images in the form of a slide show in 15 second intervals.

4 **To make SETUP screen disappear, press SETUP.**

VCR MENU SETUP

MP3/WMA/JPEG playback (continued)

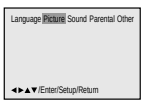


Setting the Select Files

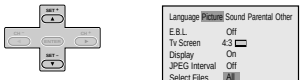
When playing back a CD containing a mixture of MP3, WMA and JPEG files, only MP3/WMA or JPEG files can be displayed on the file menu.

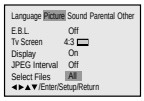
1 **Press SETUP in the stop mode.**
Press ◄ or ► to select "Picture", then press ENTER.

VCR MENU SETUP

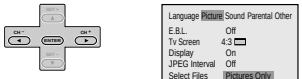


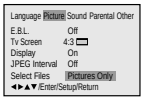
2 **Press ▲ or ▼ to select "Select Files".**





3 **Press ENTER or ◄ / ► to select your desired file type.**

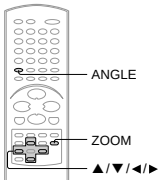




All:
Displays all files.
Music Only:
Displays only MP3/WMA files.
Pictures Only:
Displays only JPEG files.

4 **To make SETUP screen disappear, press SETUP.**

VCR MENU SETUP



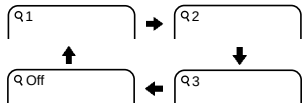
Zooming (JPEG CD)

This unit will allow you to zoom in on the JPEG image.

1 **Press ZOOM during playback.**

CM SKIP ZOOM

Enlarged JPEG images are displayed. You can make the images even larger by repeatedly pressing **ZOOM**.



2 **Press ▲ / ▼/ ◄ / ► to view a different part of the frame.**

You may move the frame from the centre position to UP, DOWN, LEFT or RIGHT direction.

3 **In the zoom mode press ZOOM repeatedly to return to a 1:1 view (Off).**

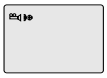
CM SKIP ZOOM

Changing angles (JPEG CD)

You can display JPEG images rotating at 90 degree intervals.

1 **Press ANGLE during playback.**
Images are rotated 90 degrees to the right.

COUNTER RESET ANGLE

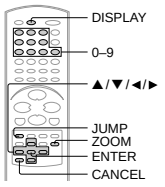


2 **Press ANGLE repeatedly until the desired angle is selected.**
Pressing ANGLE four times returns the image to its original angle.

COUNTER RESET ANGLE

- Images are displayed at the same angle until the disc is removed.

Zooming/Locating desired scene



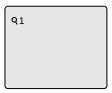
Zooming

This unit will allow you to zoom in on the frame image. You can then make selections by switching the position of the frame.

1 **Press ZOOM during playback.**

CM SKIP ZOOM

The centre part of the image will be zoomed in.
Each press of **ZOOM** will change the ZOOM 1 (x 1.3), 2 (x 1.5) and 3 (x 2.0).



2 **Press ▲ / ▼/ ◄ / ► to view a different part of the frame.**

You may move the frame from the centre position to UP, DOWN, LEFT or RIGHT direction.

3 **In the zoom mode press ZOOM repeatedly to return to a 1:1 view (Off).**

CM SKIP ZOOM

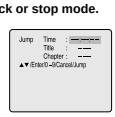
Notes:
- You can select the Pause, Slow or Search playback in the zoom mode.
- Some discs may not respond to zoom feature.

Locating desired scene

Use the title, chapter and time recorded on the disc to locate the desired point to play back.
To check the title, chapter and time, press **DISPLAY**.

1 **Press JUMP during playback or stop mode.**

ZERO RETURN JUMP



2 **Press ▲ or ▼ to select the "Time", "Title" or "Chapter".**

3 **Press Numbered buttons (0–9) to change the number.**

- If you input a wrong number, press **CANCEL**.
- Refer to the package supplied with the disc to check the numbers.

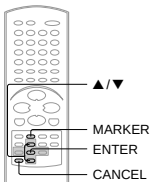
4 **Press ENTER. Playback starts.**

- When you change the title, playback starts from Chapter 1 of the selected title.
- Some discs may not work in the above operation.

Note:
In case of the Video-CD playback with PBC, the JUMP does not work. To turn off PBC, see page 43.

Marking desired scenes

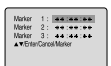
The unit stores the points that you want to watch again up to 3 points.
You can resume playback from each scene.



Marking the Scenes

1 **Press MARKER during playback.**

MARKER



2 **Select the blank Marker using ▲ or ▼. Then press ENTER at the desired scene.**

- Repeat this procedure to set the other 2 scenes.

3 **Press MARKER to remove this display.**

MARKER

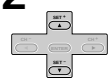
Notes:
- Some discs may not work with the marking operation.
- The marking is canceled when you open the disc tray or turn the power off.
- Some subtitles recorded around the marker may fail to appear.

Returning to the Scenes

1 **Press MARKER during playback or stop mode.**

MARKER

2 **Press ▲ or ▼ to select the Marker 1-3.**

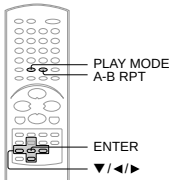


3 **Press ENTER.**

Playback starts from the marked scene.

■ To cancel the Marker
Follow the above steps 1~2, then press **CANCEL**.

Repeat playback/A-B Repeat playback



Repeat playback of Title, Chapter and Track

1 **Press PLAY MODE during playback or stop mode.**
SP/SLP
PLAY MODE

2 **DVD**
Press ◄/► or ENTER once or twice to select "Chapter" or "Title".

CD/VCD
Press ▼ to select "Repeat".
Press ◄/► or ENTER once or twice to select "Track" or "All".

3 **Press PLAY MODE again to make the screen disappear.**
Press PLAY to start Repeat playback.
To resume normal playback, select Repeat "Off".

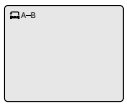
Notes:
Some discs may not work with the repeat operation.

A-B Repeat playback

A-B repeat playback allows you to repeat material between two selected points.

1 **Press A-B RPT during playback.**
A-B RPT
The start point is selected.

2 **Press A-B RPT again.**
A-B RPT
The end point is selected. Playback starts at the point that you selected. Playback stops at the end point, returns to Point A automatically, then starts again.

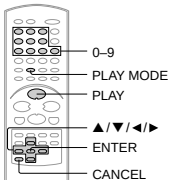


■ **To resume normal playback**
Press **A-B RPT** again.
A-B RPT
"Off" appears on the screen.

Notes:
- In A-B repeat mode, subtitles near point A or B may not appear.
- A-B Repeat playback is not available in multi-angle scenes.
- A-B Repeat playback does not work when Repeat playback is on.
- You may not be able to set A-B Repeat, depending on the scenes of the DVD.
- A-B repeat does not work with an interactive DVD, MP3/WMA/JPEG CD and Video CD with PBC.

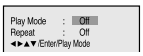
Program playback/Random playback (CD)

You can arrange the order of tracks on the disc.



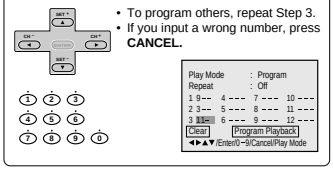
Program Playback

1 **Press PLAY MODE in the stop mode.**
SP/SLP
PLAY MODE



2 **Press ▲ or ▼ to select Play Mode, then press ◄/► or to select "Program".**

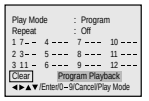
3 **Press ▲/▼ or ◄/► to select the programming position. Use Numbered buttons (0–9) to input the Track numbers.**



- To program others, repeat Step 3.
- If you input a wrong number, press **CANCEL**.

4 **Press ▲/▼ or ◄/► to select "Program Playback" and press ENTER.**

The programmes you selected will start to playback in the order.
To return to normal playback, select Play Mode: "Off".



■ **To cancel program playback**
Select "Clear" and press **ENTER**.

- The program is canceled when you open the disc tray or turn the power off.

Note:
In playing back the Video CD with PBC, you can not set Program playback.

Random Playback

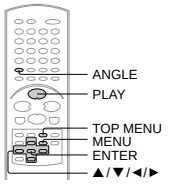
1 **Press PLAY MODE in the stop mode.**
SP/SLP
PLAY MODE

2 **Press ▲/▼ to select Play Mode, then press ◄/► to select "Random".**

3 **Press PLAY.**
PLAY
The Random Playback will start.

Note:
In playing back the Video CD with PBC, you can not set Random playback.

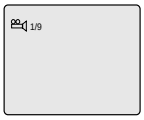
Changing angles/Title selection/DVD menu



Changing Angles

When playing back a disc recorded with multi-angle facility, you can change the angle that you are viewing the scene from.

1 **Press ANGLE during playback.**
The current angle will appear.
COUNTER RESET
ANGLE



2 **Press ANGLE repeatedly until the desired angle is selected.**
COUNTER RESET
ANGLE

Note:
Depending on the DVD, you may not be able to change the angles even if multi-angles are recorded on the DVD.

Title Selection

Two or more titles are recorded on some discs. If the title menu is recorded on the disc, you can select the desired title.

1 **Press TOP MENU during playback.**
TOP MENU
Title menu appears on the screen.

2 **Press ▲/▼ or ◄/► to select the desired title.**

3 **Press ENTER or PLAY.**
The playback of the selected title will start.
PLAY

Note:
Depending on the DVD, you may not be able to select the title. Depending on the DVD, a "title menu" may simply be called a "menu" or "title" in the instructions supplied with the disc.

DVD Menu

Some DVDs allow you to select the disc contents using the menu.
When you play back these DVDs, you can select the subtitle language and sound-track language, etc. using the menu.

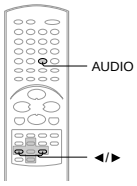
1 **Press MENU during playback.**
MENU
The DVD menu appears on the screen.
- Press **MENU** again to resume playback at the scene when you pressed **MENU**.

2 **Press ▲/▼ or ◄/► to select the desired item.**

3 **Press ENTER.**
The menu continues to another screen. Repeat steps 2 and 3 to set the item completely.

Note:
Depending on the DVD, you may not be able to resume playback from the scene point when you pressed **MENU**.

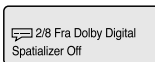
Changing soundtrack language/ Setting surround sound



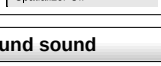
Changing soundtrack language

You can select the language when you play a multilingual disc.

1 **Press AUDIO during playback.**
AUDIO SELECT
AUDIO
The current soundtrack language will appear.



2 **Press AUDIO repeatedly until the desired language is selected.**
AUDIO SELECT
AUDIO
The on-screen display will disappear after a few seconds.



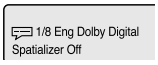
■ **In case of Video CD playback**
Audio type changes as follows each time you press **AUDIO**.

Notes:
- If the desired language is not heard after pressing the button several times, the language is not recorded on the disc.
- Changing soundtrack language is cancelled when you open the disc tray. The initial default language or available language will be heard if the disc is played back again.

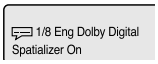
Setting surround sound

This DVD/VCR equipped with a "SPATIALIZER VIRTUAL SURROUND". It can produce the effect of being in a cinema or a concert hall.

1 **During disc playback press AUDIO.**
AUDIO SELECT
AUDIO



2 **Press ◄ or ► to select "On".**

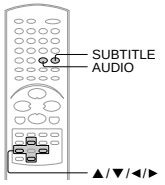


■ **To cancel Surround mode**:
Follow the left steps 1~2, then press ◄ or ► to select the "Off" position.

Note:
The "SPATIALIZER VIRTUAL SURROUND" is effective only for the sound of disc.

Spatializer® 3-Dimensional Sound Processing provided by Desper Products. Inc.
Certain audio features of this product manufactured under a license from Desper Products, Inc., Spatializer® and the circle-in-square device are trademarks owned by Desper Products, Inc.

Setting subtitles/Karaoke playback



Turning the subtitles on and off

When playing back a disc recorded with subtitles, you can turn the subtitles on or off.

Press SUBTITLE during playback until "Off" appears.

ATR SUBTITLE

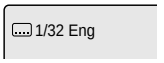
Note:
Depending on the DVD, you may not be able to turn the subtitles on even if they are recorded on it.
Depending on the DVD, you may not be able to turn the subtitles off.

Changing the subtitle language

You can select the language when playing back a disc recorded with multi-lingual subtitles.

1 **Press SUBTITLE repeatedly during playback until your desired language appears.**

ATR SUBTITLE



2 **The on-screen display will disappear after a few seconds.**

Notes:
- Changing subtitle language is cancelled when you open the disc tray.
- Depending on the DVD, you may not be able to change the subtitles even if multilingual subtitles are recorded on it. While playing the DVD, the subtitle may change when: -you open or close the disc tray -you change the title.
- In some cases, the subtitle language is not changed to the selected one immediately.

Karaoke playback

You can turn the vocal on or off recorded on the DVD KARAOKE.

1 **During DVD KARAOKE disc playback, press AUDIO.**

AUDIO SELECT AUDIO

2 **Press ▲ or ▼ until the KARAOKE symbol ( ) appears.**
- If you play non-Karaoke disc, the KARAOKE symbol ( ) does not appear.

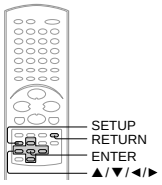
3 **Press ◄ or ► to select "On" or "Off".**

On : The primary vocal is output when it is recorded on the disc.
Off : The primary vocal is not output.

Notes:
- The vocal output feature is used during playback of Dolby Digital (multi-channel) recorded DVD KARAOKE discs. This feature allows you to turn off vocal audio tracks, or restore them for background accompaniment.
- When playing Karaoke, connect appropriate audio equipment such as an amplifier to the DVD/VCR.

E.B.L. (Enhanced Black Level)

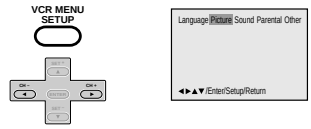
To select the black level of playback pictures, set your preference and monitor's ability.



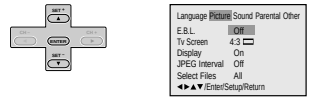
Setting E.B.L.

1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Picture".

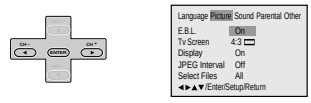
VCR MENU SETUP



2 **Press ▼ or ENTER, then press ▲ or ▼ to select "E.B.L.".**



3 **Press ◄ / ► or ENTER to select "On" or "Off".**



On: Enhanced grey scale (0 IRE cut off)
Off: Standard grey scale (7.5 IRE cut off)

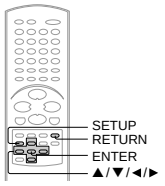
4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

VCR MENU SETUP

RETURN

Setting the aspect ratio of TV screen

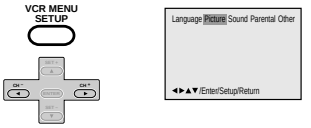
You can select the aspect ratio for your TV.
The following pages describe the setup/operation in DVD mode.



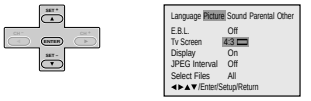
Setting the aspect ratio of TV screen

1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Picture".

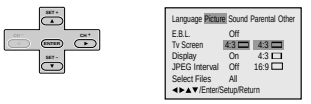
VCR MENU SETUP



2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Tv Screen".**



3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired screen type, then press ENTER.



You have the following screen sizes to choose from:

4:3 Letter box:
Select this mode when connecting to a conventional TV. When playing back a wide screen-DVD disc, it displays the wide picture with black bands at the top and bottom of screen.

4:3 Pan scan:
It displays the wide picture on the whole screen with left and right edges automatically cut off.

16:9 Wide:
Select this mode when connecting to a wide-screen TV. A wide screen picture is displayed full size.

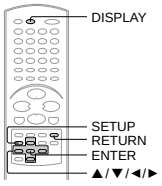
4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

VCR MENU SETUP

RETURN

Note:
If the DVD disc is not formatted in the pan & scan style, it displays 4:3 style.

Setting on screen display/Status display of disc

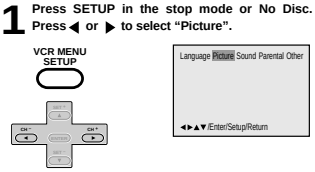


Setting on screen display

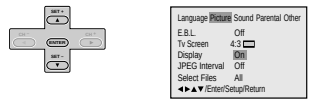
On screen display can be switched on or off when you press the buttons.

1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Picture".

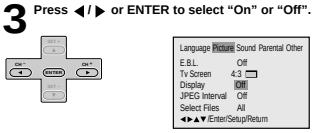
VCR MENU SETUP



2 **Press ▼ or ENTER, then press ▲ or ▼ to select "Display".**



3 **Press ◄ / ► or ENTER to select "On" or "Off".**



On: On screen displays appear when you press the buttons (factory setting).
Off: On screen displays do not appear when you press any buttons.

4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

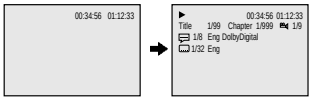
VCR MENU SETUP

RETURN

Status display of disc

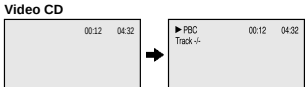
Each press of DISPLAY, the status display of the disc will appear on the screen and change as follows.

DVD

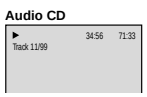


To make status display disappear, press **DISPLAY** again.

Video CD



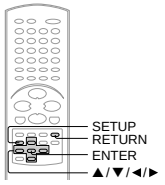
Audio CD



When you playback the CD disc, the status display will appear on the screen and continue displaying.

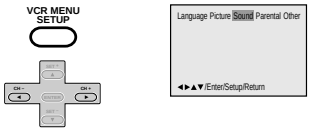
Dynamic Range Control

DRC (Dynamic Range Control) enables you to control the dynamic range so as to achieve a suitable sound for your equipment.



DVD Dynamic Range Control

1 **Press SETUP in the stop mode.**
Press ◄ or ► to select "Sound".



2 **Press ▼ or ENTER to select "Dialogue".**

3 **Press ► or ENTER, then press ▲ or ▼ to select desired setting.**

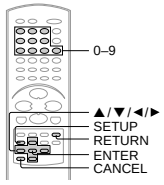
On: Loud sound such as explosion or the like is toned down slightly when played back. This makes it suitable for when it is connected to a stereo.
Off: It plays back at the recording level on the disc.

4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

Notes:
- This function works only during playback of Dolby Digital recorded discs.
- The level of Dynamic Range Reduction may differ depending on DVD video disc.

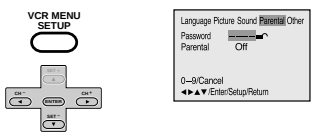
Parental control setting

Some discs are specified not suitable for children. Such discs can be limited not to play back with the unit.



DVD Parental control setting

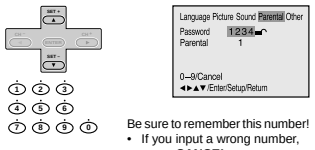
1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Parental". Then press ▼ or ENTER.



2 **Press ▲ or ▼ to select "Parental", then press ◄ or ► until the level you require appears.**

- **Level Off:** The parental control setting does not function.
- **Level 8:** All DVD software can be played back.
- **Level 1:** DVD software for adults cannot be played back.
- Select from the level 1 to level 8. The limitation will be more severe as the level number is lower.

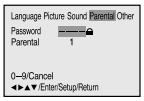
3 **Press ▲ or ▼ to select "Password".**
Press number buttons (0-9) to input a 4-digit password.



Be sure to remember this number!
- If you input a wrong number, press **CANCEL**.

4 **Press ENTER to store the password.**

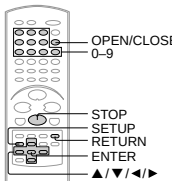
Note: Now the rating is locked and the setting cannot be changed unless you enter the correct password.



5 **Press SETUP or RETURN to remove the parental control screen.**

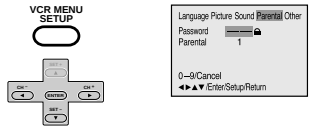
Notes:
- **If each setup (pages 57~66) has been completed, the unit can always be worked under the same conditions (especially with DVD discs). Each setup will be retained in the memory if you turn the power off.**
- Depending on the discs, the unit cannot limit playback.
- Some discs may not be encoded with specific rating level information though its disc jacket says "adult." For those discs, the age restriction will not work.

To change the parental level

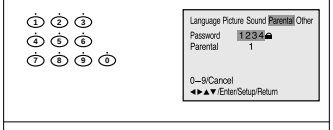


DVD To change the parental level

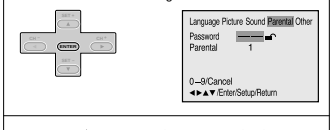
1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Parental".
Then press ▼ or ENTER.



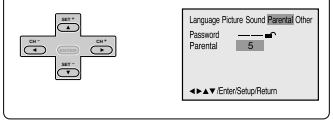
2 **Press number buttons (0–9) to enter the password you have stored.**



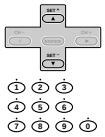
3 **Press ENTER.**
The rating is now unlocked.



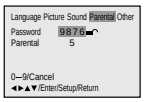
4 **Press ▲ or ▼ to select "Parental", then press ◄ or ► to change the parental level.**



5 **Press ▲ or ▼ to select "Password", then press number buttons (0–9) to enter the password.**

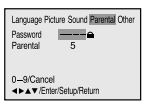


Note: You can change the password if you want.



6 **Press ENTER.**

Now the parental level is changed and locked.

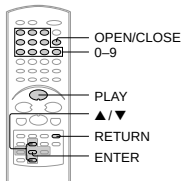


7 **Press SETUP or RETURN to remove the parental control screen.**

If you forget the password...
1. Press **OPEN/CLOSE** to open the disc tray.
2. Remove the disc.
3. Press **OPEN/CLOSE** again to close the disc tray. "No Disc" appears on the screen.
4. While holding **7** down on the remote control, press **STOP** on the front panel. "PASSWORD CLEAR" appears on the screen.
5. Enter a new password again.

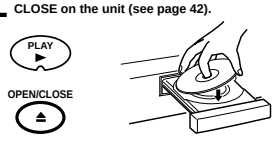
Temporary disabling of rating level by DVD disc

Depending on the DVD disc, the disc may try to temporarily cancel the rating level that you have set.
It is up to you to decide whether to cancel the rating level or not.

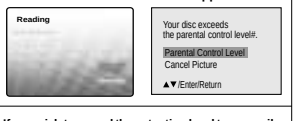


DVD Temporary disabling of rating level by DVD disc

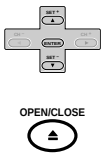
1 **Load a DVD disc and press PLAY or OPEN/CLOSE on the unit (see page 42).**



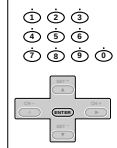
2 **If the DVD disc has been designed to temporarily cancel the Rating level, the screen which follows the "Reading" screen will change, depending on which disc is played. If you select "YES" with the ENTER key, "Your disc exceeds the parental control level#." screen will then appear.**



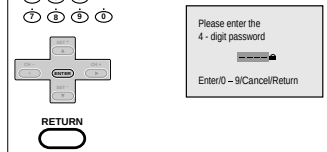
3 **If you wish to cancel the set rating level temporarily, select "Parental Control Level" with ▲ or ▼, then press ENTER. If the 4-digit password at step 2 on page 62 has been set, the password entering screen will appear as shown in step 4.**
Alternatively, if the password has not been set, playback will commence. If you don't know (or have forgotten) the password, select "Cancel Picture". The setting screen will disappear. Press OPEN/CLOSE to remove the disc.



4 **Enter the password with number buttons (0–9). Then press ENTER.**



If you interrupt the entering, press **RETURN**.

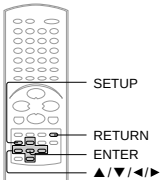


5 **Playback will commence if the entered password was correct.**

Note:
This temporary cancellation of rating level will be kept until the disc is ejected.
When the disc is ejected, the original rating level will be set again automatically.

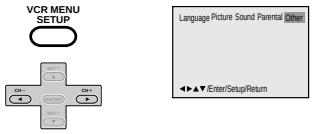
Setting OSD language

The setup language can be selected.



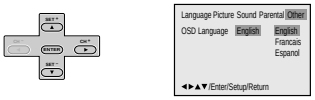
DVD VCD CD Setting OSD language

1 **Press SETUP in the stop mode or NO DISC.**
Press ◄ or ► to select "Other".



2 **Press ▼ or ENTER to select "OSD Language".**

3 **Press ► or ENTER and then press ▲ or ▼ to select desired language (e.g. English), then press ENTER.**

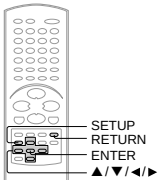


4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

If the unit does not operate properly: Static electricity, etc., may affect the player's operation. Disconnect the AC power cord once, then connect it again.

Setting language

You can select the language of "Menu", "Subtitle" and "Audio" if their languages are recorded onto the disc more than one language.



DVD Setting language

1 **Press SETUP in the stop mode or No Disc.**
Press ◄ or ► to select "Language".

2 **Press ▼ or ENTER, then press ▲ or ▼ to select desired langugage item.**

3 **Press ► or ENTER.**
Press ▲ or ▼ to select your desired language, then press ENTER.

English, Francais, Espanol:
The selected language will be heard or seen.

Other:
Other language can be selected (see "Language code list" on page 67).

Original: (Audio)
The unit will select the first priority language of each disc.

Automatic: (Subtitle)
- The unit will automatically select the same language in the AUDIO setting.
- When the unit selects the same language as the AUDIO, the subtitles will not appear during playback.
- When you do not use the same language as the AUDIO, the subtitles will appear during playback.

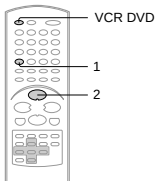
Off: (Subtitle)
Subtitles do not appear.

4 **To make SETUP screen disappear, press SETUP or RETURN while the SETUP screen is being displayed.**

Note:
If the selected language is not recorded on the disc, the first-priority language is selected.

Selecting PROGRESSIVE scan

The progressive scan capability provides the highest resolution pictures with less flicker and line structure.
If you are using the Component video jacks, but are connecting the DVD/VCR to a standard (analog) television, set PROGRESSIVE to Off.
If you are using the Component video jacks for connection to a TV or monitor that is compatible with a progressive scan signal, set PROGRESSIVE to On.



DVD VCD CD Selecting PROGRESSIVE scan

Preparation:
- Connect to a TV equipped with component jacks.
- Turn ON the TV and set it to the corresponding video input mode.
- Set the S-VIDEO/COMPONENT video selector switch on the rear panel to COMPONENT position.
- Press **VCR DVD** selector to select the DVD mode. (The DVD indicator will light.)

1 **Press PROGRESSIVE in the stop mode.**

The progressive indicator "P" on the display window will light.

- The unit recognizes the picture source (film or video) of the current disc according to the disc information.

2 **Press PLAY to start playback.**

There are two types of source content in pictures recorded in DVD video discs: film content (pictures recorded from films at 24 frames per second) and video content (video signals recorded at 30 frames per second).

When the unit plays back a film source material, uninterlaced progressive output signals are created using the original information. When a video content is played back, the unit interleaves lines between the interlaced lines on each to create the interpolated picture and outputs as the progressive signal.

■ To select PROGRESSIVE scan Off
Press **PROGRESSIVE** in the stop mode.
The progressive indicator "P" on the display window will go off.

Notes:
- Some discs may not be played back with the progressive scanning mode correctly because of the disc characteristics or recording condition.
- If your TV does not accept the progressive scan format, the picture will appear scrambled if you select progressive scan output from the unit. In such a case, select PROGRESSIVE scan Off.
- Once PROGRESSIVE scan On, all other video outputs are disabled except component video outputs.
- You cannot make the progressive scanning mode active in following cases.
  – The unit is in the VCR mode.
  – The disc is played back in the DVD mode.
  – The S-VIDEO/COMPONENT video selector switch is set to S-VIDEO position.

Language code list

Enter the appropriate code number for the initial settings "Menu", "Subtitle" and/or "Audio" (see pages 65).

Language Name	Code	Language Name	Code	Language Name	Code	Language Name	Code
Abkhazian	1112	Fiji	1620	Lingala	2224	Singhalese	2919
Afar	1111	Finnish	1619	Lithuanian	2230	Slovak	2921
Afrikaans	1116	French	1628	Macedonian	2321	Slovenian	2922
Albanian	2927	Frisian	1635	Malagasy	2317	Somali	2925
Amharic	1123	Galician	1722	Malay	2329	Spanish	1529
Arabic	1128	Georgian	2111	Malayalam	2322	Sundanese	2931
Armenian	1835	German	1415	Maltese	2330	Swahili	2933
Assamese	1129	Greek	1522	Maori	2319	Swedish	2932
Aymara	1135	Greenlandic	2122	Marathi	2328	Tagalog	3022
Azerbaijani	1136	Guarani	1724	Moldavian	2325	Tajik	3017
Bashkir	1211	Gujarati	1731	Mongolian	2324	Tamil	3011
Basque	1531	Hausa	1811	Nauru	2411	Tatar	3030
Bengali; Bangla	1224	Hebrew	1933	Nepali	2415	Telugu	3015
Bhutani	1436	Hindi	1819	Norwegian	2425	Thai	3018
Bihari	1218	Hungarian	1831	Oriya	2528	Tibetan	1225
Breton	1228	Icelandic	1929	Panjabi	2611	Tigrinya	3019
Bulgarian	1217	Indonesian	1924	Pashto, Pushto	2629	Tonga	3025
Burmese	2335	Interlingua	1911	Persian	1611	Turkish	3028
Byelorussian	1215	Irish	1711	Polish	2622	Turkmen	3021
Cambodian	2123	Italian	1930	Portuguese	2630	Twi	3033
Catalan	1311	Japanese	2011	Quechua	2731	Ukrainian	3121
Chinese	3618	Javanese	2033	Rhaeto-Romance	2823	Urdu	3128
Corsican	1325	Kannada	2124	Romanian	2825	Uzbek	3136
Croatian	1828	Kashmiri	2129	Russian	2831	Vietnamese	3219
Czech	1329	Kazakh	2121	Samoan	2923	Volapük	3225
Danish	1411	Kirghiz	2135	Sanskrit	2911	Welsh	1335
Dutch	2422	Korean	2125	Scots Gaelic	1714	Wolof	3325
English	1524	Kurdish	2131	Serbian	2928	Xhosa	3418
Esperanto	1525	Laothian	2225	Serbo-Croatian	2918	Yiddish	2019
Estonian	1530	Latin	2211	Shona	2924	Yoruba	3525
Faroese	1625	Latvian, Lettish	2232	Sindhi	2914	Zulu	3631

Before calling service personnel

Check the following guide for the possible cause of a problem before contacting service.

SYMPTOMS	POSSIBLE SOLUTIONS	PAGE
DVD/VCR		
DVD/VCR does not operate.	• Make sure the power cord is plugged in. • Try another AC outlet. • Power is off, check fuse or circuit breaker. • Unplug unit, then plug it back in. • Select the DVD or VCR mode before operating.	5 – – 5 30,42
No picture.	• Antenna connection is not correct or antenna cable is disconnected. • The video channel is not in the correct position or the TV is not set to the video channel 3 or 4. • Check the unit is connected correctly. • The video input selector of the TV is not set to VIDEO. Set to VIDEO (or equivalent). • Channel is set to the external mode.	14–17 22 14–19 – –
No sound.	• Check the unit is connected correctly. • Check the input selector of the amplifier is set properly. • The unit is in the Special playback mode.	14–19 – 31,44
The remote control does not function.	• Aim the remote control at the remote sensor. • Operate within Approx. 7 Meters or reduce the light in the room. • Clear the path of the beam. • The batteries are weak. Replace the batteries. • Check the batteries are inserted correctly.	13
No CATV reception.	• Check all CATV connections. • Station or CATV system problems, try another station.	16,17
VCR		
TV recording does not work.	• The erase prevention tab of the video cassette is broken off. • The unit is in the external input mode.	29,34
Timer recording does not work.	• The time is not set correctly. • The recording start/end time is not set correctly. • The TIMER REC has not been pressed (⏎ is not lit).	24 37 37
Noise bars on screen.	• Tracking adjustment beyond range of automatic tracking circuit. Try Manual tracking adjustment. • Video heads are dirty. • The tape is worn or damaged.	31 31 –
DVD		
Display is not shown in your language.	• Select proper language in the menu options.	64
Playback doesn't start.	• No disc is inserted. • The disc may be dirty. Clean up the disc. • The unit cannot play DVD-ROMs, etc.	42 6 8
Stopping playback, slow-motion play, repeat play, or memory play, etc. cannot be performed.	• Some discs may not do some of the functions.	–
No picture, or the screen is blurred or divided into two parts.	• The S-VIDEO/COMPONENT selector is not set correctly. • The PROGRESSIVE scan is On through the unit is connected to a TV via the VIDEO OUT or the S-VIDEO OUT jack.	19 66
No 4:3 (16:9) picture.	• The setup does not match your TV.	58
No on-screen display.	• Select Display "On".	59
No surround sound.	• The setup does not match your stereo system.	20
The unit or remote operation key is not functioning.	• Turn off the unit and unplug the AC power cord for several minutes, then replug it.	–
Playback does not start when the title is selected.	• Check the Parental setup.	61,62
Audio soundtrack and/or subtitle language is not changed when you play back a DVD.	• Multilingual language is not recorded on the DVD disc.	65
No subtitle.	• Some discs have no subtitles. • Subtitles are cleared. Press SUB TITLE.	56
Angle cannot be changed.	• Multi-angles are not recorded on the DVD disc.	54
✋ appears on the screen.	• The function is prohibited with the unit or the disc.	44

Specifications

General

Power supply	AC 120 V 60 Hz
Power consumption	Operation: 18 W, Stand by: 2 W
Weight	7.9 lbs (3.6 kg)
Dimensions	Width: 16-15/16 inches (430 mm) Height: 3-7/8 inches (99 mm) Depth: 9-13/16 inches (250.5 mm)
Tuner	181 channel freq. synthesized VHF 2-13 UHF 14-69 CATV 125 Channels
Antenna input/output	UHF/VHF In/Out: 75 Ω coaxial
RF channel output	Channel 3 or 4, Switchable
Color system	NTSC
Video head	4 Rotary heads
Audio track	Hi-Fi sound - 2 Tracks / MONO sound - 1 Track
Hi-Fi frequency response	20 Hz to 20,000 Hz
Hi-Fi dynamic range	More than 90dB
F.FWD/REW time at 25˚C (77˚F)	Approx. 1 minute and 48 seconds (with T-120 Cassette Tape)
Applicable disc	DVD (12 cm, 8 cm), CD (12 cm, 8 cm)
Frequency range	DVD: 4 Hz-22 kHz, CD: 4 Hz-20 kHz
S/N ratio	90dB (DVD)
Harmonic distortion	0.02% (DVD)
Wow and flutter	Less than 0.01% Wrms
Operating conditions	Temperature: 5˚C-40˚C (41˚F-104˚F), Operating status: Horizontal

Input/Output

DVD/VCR	
Video input	1.0 V (p-p), 75 Ω, negative sync., pin jack x 2
Video output	1.0 V (p-p), 75 Ω, negative sync., pin jack x 1
Audio input	–8 dBm, 50 kΩ, negative sync., pin jack (L/R) x 2
Audio output	–8 dBm, 1 kΩ, negative sync., pin jack (L/R) x 1
DVD	
S-video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., Mini DIN 4-pin × 1 (C) 0.286 V (p-p), 75 Ω
Component video output	(Y) 1.0 V (p-p), 75 Ω, negative sync., pin jack × 1 (P_B)/(P_R) 0.7 V (p-p), 75 Ω, pin jack × 2
Audio output (BITSTREAM/PCM COAXIAL)	0.5 V (p-p), 75 Ω, pin jack × 1
Audio output (BITSTREAM/PCM OPTICAL)	Optical connector × 1
Audio output (ANALOG)	–12 dB, 1 kΩ, pin jacks (L, R) × 1
S-VIDEO/COMPONENT video selector	Slide switch × 1

Supplied accessories

Audio/video cable 1
Remote control (SE-R0108) 1
Batteries (AAA) 2
75 ohm coaxial cable 1

• Designs and specifications are subject to change without notice.

LIMITED WARRANTY DVD VIDEO PLAYER

Toshiba America Consumer Products, L.L.C. ("TACP"), Toshiba Hawaii ("THI") and Toshiba Canada Limited ("TCL") make the following limited warranties. These limited warranties extend to original purchaser or any person receiving this set as a gift from the original purchaser and to no other purchaser or transferee.

Limited Ninety (90) Day Warranty
TACP/THI warrant this product against defects in materials or workmanship for a period of ninety (90) days after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you. You must deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products L.L.C.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Limited One (1) Year Warranty
TACP/THI further warrant the parts in this product against defects in materials or workmanship for a period of one (1) year after the date of original retail purchase. During this period, TACP/THI will repair or replace a defective product or part, at their option, with a new or refurbished product or part without charge to you, except that if a defective part is replaced after ninety (90) days from the date of the original retail purchase you pay labor charges involved in the replacement. You must also deliver the entire product to a TACP/THI Authorized Service Station. You are responsible for all transportation and insurance charges for the unit to and from the Authorized Service Station. If you live in the U.S.A. you may, at your option, return your DVD Unit to:

Toshiba America Consumer Products L.L.C.
Returns Center
1420C Toshiba Dr.
Lebanon, TN 37087

Upon receipt we will, at our option, exchange the DVD Unit with a new or refurbished unit. **Canadian Consumers are requested to contact TCL. In Hawaii consumers are requested to contact THI.**

Rental Units
The warranty for rental units begin with the first rental or thirty (30) days from the date of shipment to the rental firm, whichever comes first.

Commercial Units
Products sold and used for commercial use have a limited ninety (90) day warranty for all parts and labor.

Owner's Manual
You should read the owner's manual thoroughly before operating this product. You should complete and mail the enclosed Demographic card within ten (10) days after you, or the person who has given you this product as a gift, purchased this product. This is one way to enable TACP to provide you with better customer service and improved products. Failure to return the card will not affect your rights under this warranty.

Your Responsibility
The above warranties are subject to the following conditions:

(1) You must retain your bill of sale or provide other proof of purchase.
(2) You must notify a TACP/THI/TCL /Authorized Service Station within thirty (30) days after you discover a defective product or part.
(3) All warranty servicing of this product must be made by a TACP/THI/TCL Authorized Service Station.
(4) U.S.A. warranties are effective only if the product is purchased and operated in the Continental U.S.A. or Puerto Rico.
(5) Labor service charges for set installation. Set up, adjustment of customer controls and installation or repair of antenna systems are not covered by this warranty. Reception problems caused by inadequate antenna systems are your responsibility.
(6) Warranties extend only to defects in materials or workmanship as limited above and do not extend to any product or parts which have been lost or discarded by you or to damage to products or parts caused by misuse, accident, damage caused by Acts of God, such as lightning or fluctuations in electric power, improper installation, improper maintenance or use in violation of instructions furnished by us; or to units which have been altered or modified without authorization of TACP/THI/TCL or to damage to products or part thereof which have had the serial number removed, altered, defaced or rendered illegible.
(7) Should you elect to return your DVD Unit to TACP after the ninety (90) days and within one (1) year, or after the warranty period has expired: Call (800)-631-3811 to receive information concerning an exchange price. Payment must be enclosed with product in the form of a certified check or money order including reason for return.
(8) Physically damaged DVD Units are not acceptable for repair or exchange whether in or out of warranty and will be returned as received.

(Continued)

LIMITED WARRANTY DVD VIDEO PLAYER (continued)

How to Obtain Warranty Service

(1) Refer to the troubleshooting guide in your owner's manual. This check list may solve your problem.
(2) In the U.S.A., only call the TACP toll free number 800-631-3811, or if in Hawaii or Canada see listing below within (30) days after you find a defective product or part.
(3) Arrange for the delivery of the product to the TACP/THI/TCL Authorized Service Station or TACP Return Center. Products shipped to the Service Station must be insured and safely and securely packed, preferably in the original shipping carton, and a letter explaining the defect and also a copy of the bill of sale or other proof of purchase must be enclosed.

In the Continental United States contact:

In Hawaii contact:
Toshiba Hawaii Inc.
327 Kamakee Street
Honolulu, HA 96814
(808)-521-5377

In Canada contact:
Consumer Electronics Group
191 McNabb Street
Markham, Ontario L3R 8H2
(905)-470-5400

Consumer Electronics Group
22171 Fraserwood Way
Richmond, B.C. V6W 1J5
(604)-303-2500

Consumer Electronics Group
18050 Trans canada
Kirkland, Quebec H9J 4A1
(514)-390-7766

All warranties implied by state law, including the implied warranties of merchantability and fitness for a particular purpose, are expressly limited to the duration of the limited warranties set forth above. With the exception of any warranties implied by state law as hereby limited, the foregoing warranty is exclusive and in lieu of all other warranties, guarantees, agreements and similar obligations of manufacturer or seller with respect to the repair or replacement of any parts. In no event shall TACP/THI be liable for consequential or incidental damages.
No person, agent, distributor, dealer or company is authorized to change, modify or extend the terms of these warranties in any manner whatsoever. The time within which an action must be commenced to enforce any obligation of TACP/THI arising under the warranty or under any statute, or law of the United States or any state thereof, is hereby limited to ninety (90) days from the date you discover or should have discovered, the defect. This limitation does not apply to implied warranties arising under state law.
This warranty gives you specific legal rights and you may also have other rights which may vary from state to state. Some states do not allow limitation on how long an implied warranty lasts, when an action may be brought, or the exclusion or limitation of incidental or consequential damages, so the above provisions may not apply to you.

IMPORTANT: PACKING AND SHIPPING INSTRUCTION
When you send the product to a Service Station, you must use the original carton box and packing material, then insert the original carton box containing the unit into another carton using more packing material.

CAUTION

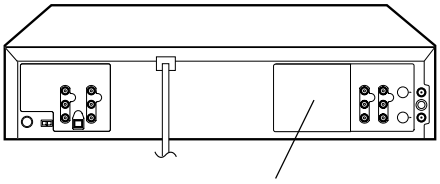
THIS DIGITAL VIDEO PLAYER EMPLOYS A LASER SYSTEM.

TO ENSURE PROPER USE OF THIS PRODUCT, PLEASE READ THIS SERVICE MANUAL CAREFULLY AND RETAIN FOR FUTURE REFERENCE. SHOULD THE UNIT REQUIRE MAINTENANCE, CONTACT AN AUTHORIZED SERVICE LOCATION-SEE SERVICE PROCEDURE.

USE OF CONTROLS, ADJUSTMENTS OR THE PERFORMANCE OF PROCEDURES OTHER THAN THOSE SPECIFIED HEREIN MAY RESULT IN HAZARDOUS RADIATION EXPOSURE.

TO PREVENT DIRECT EXPOSURE TO LASER BEAM, DO NOT TRY TO OPEN THE ENCLOSURE. VISIBLE LASER RADIATION MAY BE PRESENT WHEN THE ENCLOSURE IS OPENED. DO NOT STARE INTO BEAM.

Location of the required Marking
The rating sheet and the safety caution are on the rear of the unit.



CERTIFICATION: COMPLIES WITH FDA RADIATION PERFORMANCE STANDARDS, 21 CFR SUBCHAPTER J.

PREPARATION OF SERVICING

The laser diode used for a pickup head may be destroyed with external static electricity.
Moreover, even if it is operating normally after repair, when static electricity discharge is received at the time of repair, a life of product may become short.
Please perform the following measure against static electricity, be careful of destruction of a laser diode enough at the time of repair, and work.

- It works on the desk which performed measures against static electricity, such as conductive mat.
- Soldering iron with ground wire or ceramic type is used.
- A worker needs to use a ground conductive wrist strap for body.

IMPORTANT SERVICE SAFETY INFORMATION

Safety precautions to be followed during servicing:

1. Parts marked with an ⚠ are critical parts for safety. Replace only with the one described in the parts list.
2. Before returning the DVD product to the customer, make the appropriate leakage current check or resistance measurements to ensure that exposed parts are properly insulated from the supply circuit.

A leakage current check is recommended for this unit. Plug the AC line cord directly into a 120V 60Hz AC outlet (do not use an isolation transformer for this check). Use a leakage current tester (Fig. 1) or a metering system which complies with Underwriters Laboratories (UL 1409). Measure for current from all exposed metal parts of the cabinet to a known earth ground: particularly, any exposed metal part having a return path to the chassis. Any current measured must not exceed 0.5mA. Any measurement not within the limits outlined above are indicative of a potential shock hazard and corrective action must be taken before returning the unit to the customer.

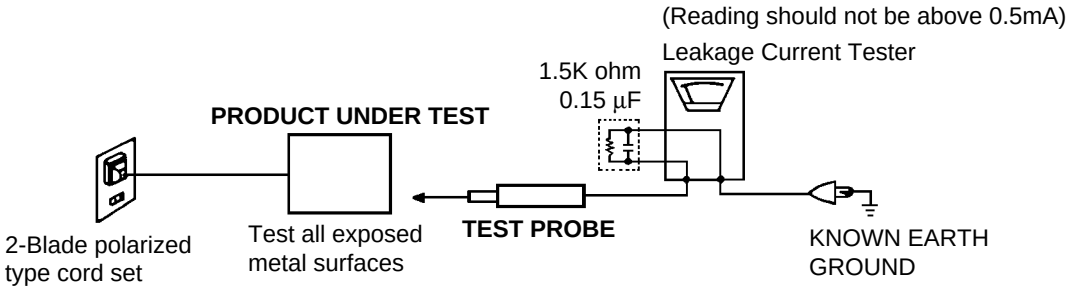


Fig. 1 AC Leakage Test

IMPORTANT SAFEGUARDS

1. **READ INSTRUCTIONS**
   All the safety and operating instructions should be read before the unit is operated.
2. **RETAIN INSTRUCTIONS**
   The safety and operating instructions should be retained for future reference.
3. **HEED WARNINGS**
   All warnings on the unit and in the operating instructions should be adhered to.
4. **FOLLOW INSTRUCTIONS**
   All operating and use instructions should be followed.
5. **CLEANING**
   Unplug this unit from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. **ATTACHMENTS**
   Do not use attachments not recommended by the unit's manufacturer as they may cause hazards.
7. **WATER AND MOISTURE**
   Do not use this unit near water. For example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool.
8. **ACCESSORIES**
   Do not place this unit on an unstable cart, stand, tripod, bracket, or table. The unit may fall, causing serious injury, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer.

PORTABLE CART WARNING
(symbol provided by RETAC)

S3125A

8A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

9. **VENTILATION**
   Slots and openings in the cabinet and in the back or bottom are provided for ventilation, to ensure reliable operation of the unit, and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the unit on a bed, sofa, rug, or other similar surface. This unit should never be placed near or over a radiator or heat source. This unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. **POWER SOURCES**
    This unit should be operated only from the type of power source indicated on the rating plate. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the operating instructions.
11. **GROUNDING OR POLARIZATION**
    This unit is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug. If your unit is equipped with a 3-wire grounding-type plug, a plug having a third (grounding) pin, this plug will only fit into a grounding-type power outlet. This too, is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type plug.
12. **POWER-CORD PROTECTION**
    Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
13. **LIGHTNING**
    To protect your unit from a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the unit due to lightning and power line surges.
14. **POWER LINES**
    An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
15. **OVERLOADING**
    Do not overload wall outlets and extension cords, as this can result in a risk of fire or electric shock.
16. **OBJECT AND LIQUID ENTRY**
    Do not push objects through any openings in this unit, as they may touch dangerous voltage points or short out parts that could result in fire or electric shock. Never spill or spray any type of liquid into the unit.

IMPORTANT SAFEGUARDS (CONTINUED)

17. OUTDOOR ANTENNA GROUNDING

If an outside antenna or cable system is connected to the unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA 70, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

18. SERVICING

Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

19. DAMAGE REQUIRING SERVICE

Unplug this unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power-supply cord or plug is damaged.
b. If liquid has been spilled, or objects have fallen into the unit.
c. If the unit has been exposed to rain or water.
d. If the unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the unit to its normal operation.
e. If the unit has been dropped or the cabinet has been damaged.
f. When the unit exhibits a distinct change in performance, this indicates a need for service.

20. REPLACEMENT PARTS

When replacement parts are required, be sure the service technician uses replacement parts specified by the manufacturer or those that have the same characteristics as the original parts.
Unauthorized substitutions may result in fire, electric shock or other hazards.

21. SAFETY CHECK

Upon completion of any service or repairs to this unit, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.

22. WALL OR CEILING MOUNTING

The product should be mounted to a wall or ceiling only as recommended by the manufacturer.

23. HEAT

The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

24. DISC TRAY

Keep your fingers well clear of the disc tray as it is closing. It may cause serious personal injury.

25. CONNECTING

When you connect the product to other equipment, turn off the power and unplug all of the equipment from the wall outlet. Failure to do so may cause an electric shock and serious personal injury. Read the owner's manual of the other equipment carefully and follow the instructions when making any connections.

26. SOUND VOLUME

Reduce the volume to the minimum level before you turn on the product. Otherwise, sudden high volume sound may cause hearing or speaker damage.

27. SOUND DISTORTION

Do not allow the product output distorted sound for a longtime. It may cause speaker overheating and fire.

28. HEADPHONES

When you use the headphones, keep the volume at a moderate level. If you use the headphones continuously with high volume sound, it may cause hearing damage.

29. LASER BEAM

Do not look into the opening of the disc tray or ventilation opening of the product to see the source of the laser beam. It may cause sight damage.

30. DISC

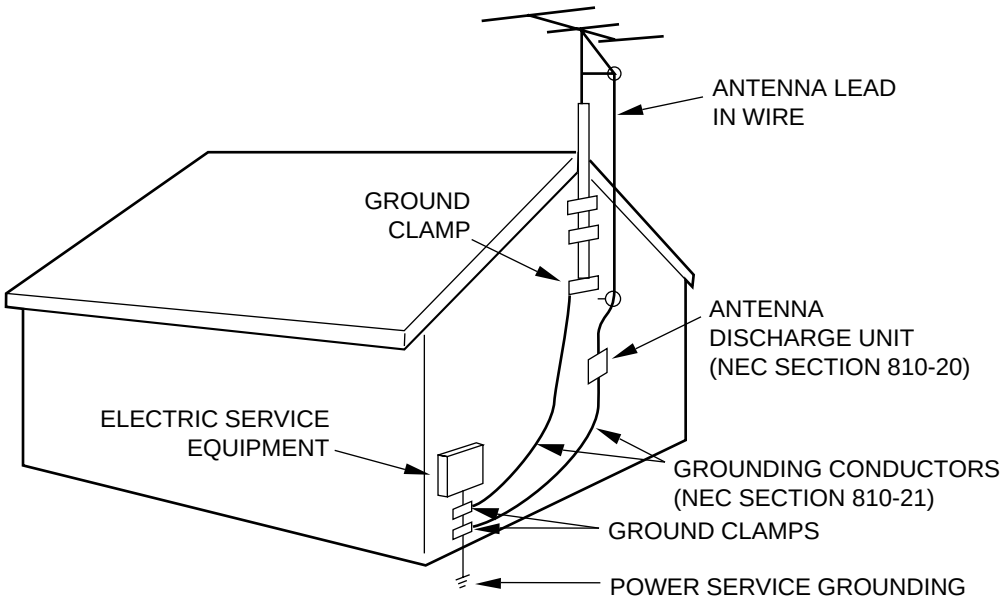
Do not use a cracked, deformed, or repaired disc. These discs are easily broken and may cause serious personal injury and product malfunction.

31. NOTE TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer’s attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

IMPORTANT SAFEGUARDS (CONTINUED)

EXAMPLE OF ANTENNA GROUNDING AS PER THE NATIONAL ELECTRICAL CODE



TAPE REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet, Front Cabinet and DVD Block. **(Refer to item 1 of the DISASSEMBLY INSTRUCTIONS.)**
2. Remove the screw 1 of the Deck Chassis and remove the Loading Motor. **(Refer to Fig. 2)**
3. Rotate the Pinch Roller Cam in the direction of the arrow by hand to slacken the Video Tape.
4. Rotate the Clutch Ass'y either of the derections to wind the Video Tape in the Cassette Case.
5. Repeat the above step 3~4. Then take out the Video Cassette from the Deck Chassis. Be careful not to scratch on the tape.

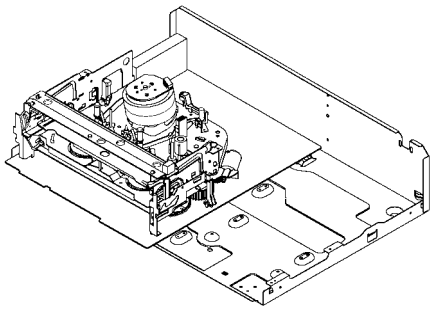


Fig. 1

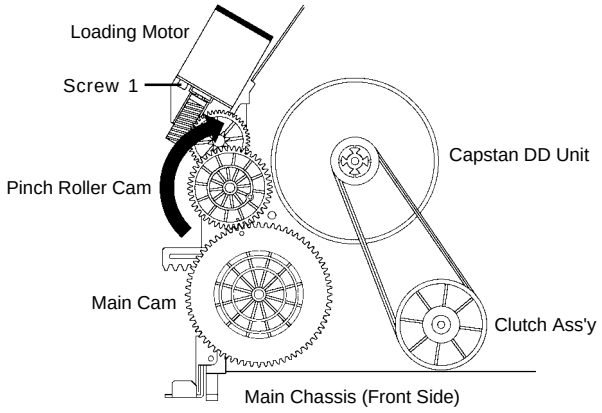


Fig. 2

DISC REMOVAL METHOD AT NO POWER SUPPLY

1. Remove the Top Cabinet and Front Cabinet. **(Refer to item 1 of the DISASSEMBLY**
2. **INSTRUCTIONS.)**
   Slide the Rack Loading (White) toward the arrow direction by using a minus driver to release the lock.
3. **(Refer to Fig. 1)**
   Draw the Tray.

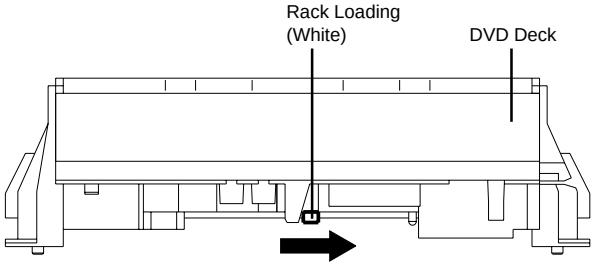


Fig. 1

PARENTAL CONTROL - RATING LEVEL

4 DIGIT PASSWORD CANCELLATION

If the stored 4 digit password in the Rating Level menu needs to be cancelled, please follow the steps below.

1. Turn Unit ON.
2. Press and hold the '7' key on the remote control unit.
3. Simultaneously press and hold the 'STOP' key on the front panel.
4. Hold both keys for more than 3 seconds.
5. The On Screen Display message 'PASSWORD CLEAR' will appear.
6. The 4 digit password has now been cleared

TABLE OF CONTENTS

• OWNER'S MANUAL

CAUTION A1-1
IMPORTANT SERVICE SAFETY INFORMATION A1-2
IMPORTANT SAFEGUARDS ..... A1-3~A1-5
TAPE REMOVAL METHOD AT NO POWER SUPPLY A1-6
DISC REMOVAL METHOD AT NO POWER SUPPLY A1-6
PARENTAL CONTROL-RATING LEVEL A1-6
TABLE OF CONTENTS A2-1
GENERAL SPECIFICATIONS ..... A3-1~A3-7
DISASSEMBLY INSTRUCTIONS
1. REMOVAL OF MECHANICAL PARTS AND P. C. BOARDS B1-1, B1-2
2. REMOVAL OF VCR DECK PARTS ..... B2-1~B2-6
3. REMOVAL OF DVD DECK PARTS ..... B3-1~B3-4
4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC B4-1, B4-2

KEY TO ABBREVIATIONS C1-1, C1-2
SERVICE MODE LIST C2-1
PREVENTIVE CHECKS AND SERVICE INTERVALS C3-1, C3-2
RE-WRITE FOR DVD FIRMWARE C4-1
WHEN REPLACING EEPROM (MEMORY) IC C4-2
RF SIGNAL CHECK OF DVD PCB C4-3
SERVICING FIXTURES AND TOOLS D1-1
PREPARATION FOR SERVICING D1-1
MECHANICAL ADJUSTMENTS ..... D2-1~D2-4
ELECTRICAL ADJUSTMENTS D3-1, D3-2
TROUBLESHOOTING GUIDE ..... E-1~E-33
BLOCK DIAGRAMS
DVD F-1, F-2
Y/C/AUDIO/CCD/HEAD AMP F-3, F-4
SYSTEM CONTROL F-5, F-6
OPERATION/DISPLAY F-7, F-8
Hi-Fi/DEMODULATOR F-9, F-10
TUNER/JACK F-11, F-12
POWER F-13, F-14

PRINTED CIRCUIT BOARDS
DVD G-1,G-2
VCR ..... G-3~G-6
OPERATION 1/OPERATION 2/FRONT JACK/RELAY/SW G-7, G-8

SCHEMATIC DIAGRAMS
MPEG/MICON H-1, H-2
MEMORY H-3, H-4
RF AMP/DSP H-5, H-6
AUDIO/VIDEO H-7, H-8
Y/C/AUDIO/CCD/HEAD AMP H-9, H-10
SYSCON H-11, H-12
TUNER/JACK H-13, H-14
OPERATION/DISPLAY H-15, H-16
Hi-Fi/DEMODULATOR H-17, H-18
POWER H-19, H-20
OPERATION1,2/FRONT AV JACK H-21, H-22
SW/RELAY/FG H-23, H-24

INTERCONNECTION DIAGRAM H-25, H-26
WAVEFORMS I-1, I-2
MECHANICAL EXPLODED VIEW J1-1, J1-2
CHASSIS EXPLODED VIEWS J2-1, J2-2
DVD DECK EXPLODED VIEWS J3-1
MECHANICAL REPLACEMENT PARTS LIST K1-1
CHASSIS REPLACEMENT PARTS LIST K2-1
DVD DECK REPLACEMENT PARTS LIST K3-1
ELECTRICAL REPLACEMENT PARTS LIST ..... K4-1~K4-15

GENERAL SPECIFICATIONS

G-1	**Outline of the product**				DVD VIDEO PLAYER & VHS Player / Recorder
G-2	**DVD System**	Color System			NTSC
		Disc			DVD, CD-DA, CD-R/RW, VIDEO CD, SVCD, DVD-R/RW (VIDEO FORMAT ONLY)
		Disc Diameter			120 mm , 80 mm
		Deck	Disc Loading System		Front Disc Loading
			Motor		2 Motors
		Pick up			1-Lens 2-Beams System
		Playback time (Max)	DVD 1-Layer		135min (4.7GB)
			DVD 2-Layer		245min (8.5GB)
			CD		74min
			VIDEO CD		74min
		Search speed			Fwd 2-100 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
					Rev 2-100 times / 4 step
				Actual	2-45 times (DVD, VIDEO CD)
					4-40 times (CD)
		Slow speed			Fwd 1/7-1/2 times
				Actual	--
					Rev --
				Actual	--
G-3	**VCR System**	System			VHS Player / Recorder
		Video System			NTSC
		Hi-Fi STEREO			Yes
		NTSC PB(PAL60Hz)			No
		Deck	DECK		OVD-7
			Loading System		Front
			Motor		3
		Heads	Video Head		4Head
			FM Audio Head		2Head
			Audio /Control		Mono/Yes
			Erase(Full Track Erase)		Yes
		Tape Speed	Rec PAL		-
			Rec NTSC		SP/SLP(EP)
			Play PAL		-
			Play NTSC		SP/SLP(EP)
		Fast Forward / Rewind Time (Approx.) at 25oC			FF:1'48"/REW:1'48"
				with Cassette	T-120
		Forward/Reverse Picture Search	NTSC or PAL-M		SP/LP/SLP(EP) = 3x,5x / 7x,9x / 9x,15x
			PAL or SECAM		-
		Frame Advance			Yes
		Slow Speed			1/10
G-4	**Tuning System**	Broadcasting System			US System M
		Tuner and Receive CH	System		1Tuner
			Destination		US (w/CATV)
			Tuning System		F-Synth
			Input Impedance		VHF/UHF 75 OHM
			CH Coverage		2~69,4A,A-5~A-1,A~I J~W,W+1-W+84
		Intermediate Frequency	Picture(FP)		45.75 MHz
			Sound(FS)		41.25 MHz
			FP-FS		4.50 MHz
		Preset CH			-
		RF Converter Output			Yes
			Channel		3 or 4 ch
			Level/Impedance		66 dBu / 75 Ohm
			Sound Selector		No
		Stereo/Dual TV Sound			US-ST
		Tuner Sound Muting			Yes
G-5	**Power**	Power Source	AC		120V 60Hz
			DC		-
		Power Consumption			18 W at 120V 60Hz
			Stand by		2 W at 120V 60Hz
			Per Year		-- W
		Protector	Power Fuse		Yes
G-6	**Regulation**		Safety		UL / CSA
			Radiation		FCC / IC
			Laser		DHHS

GENERAL SPECIFICATIONS

G-7	**Temperature**		Operation	5oC - 40oC
			Storage	-20oC - 60oC
G-8	**Operating Humidity**			Less than 80% RH
G-9	**Signal**	Video Signal	Output Level	1 V p-p/75 ohm (DVD,VCR)
			S/N Ratio (Weighted)	65 dB(D\ 50 dB(VCR)
			Horizontal Resolution	500 Lines 230 Lines(VCR Mode)
		RGB Signal	Output Level	-
		Audio Signal	Input Level Microphone	-
			Input Level Line	-8 dBm/ 50k ohm(VCR)
			Output Level Line	-8 dBm/ 1k ohm (VCR, 0dBm=0.775Vrms) -12dBm/ 1k ohm (DVD, -20dBFs 0dBFs=2.0Vrms)
			Digital Output Level	0.5 V p-p / 75 ohm(DVD)
			S/N Ratio at (Weighted)	90dB(DVD), 42dB(VCR at SP)
			Harmonic Distortion (1KHz) Typical	0.02% (DVD), 1.5% (VCR at SP)
			Frequency Response : DVD Mode at DVD	4 Hz - 22 KHz
			DVD Mode at VIDEO CD	4 Hz - 20 KHz
			DVD Mode at SVCD	4 Hz - 20 KHz
			DVD Mode at CD	4 Hz - 20 KHz
			VCR Mode at SP	100Hz - 10kHz
			VCR Mode at LP	-
			VCR Mode at SLP	100Hz - 4kHz
		Hi-Fi Audio Signal	Dynamic Range : More than	90dB
			Frequency Response	20Hz ~20kHz
			Wow And Flutter : Less than	0.01 %Wrms
			Channel Separation : More than	60 dB
			Harmonic Distortion : Less than	0.01

GENERAL SPECIFICATIONS

G-10	On Screen Display (DVD)	Menu			Yes
		Menu Type			Character
		Language			Yes
			Menu		Yes
			Sub Title		Yes
			Audio		Yes
		Picture			Yes
			TV Screen Size		Yes
			OSD Display On/Off		Yes
			JPEG Interval		Yes
			Select Files		Yes
			E.B.L. (Enhanced Black Level)		Yes
		Sound			Yes
			DRC (Dynamic Range Control)		Yes
			dts Decode		No
			Output (5.1ch/2ch)		No
			Surround On/Off		No
			Center On/Off		No
			Sub Woofer On/Off		No
		Parental			Yes
			Password Lock/Unlock		Yes
			Rating Level		Yes
		Other			Yes
			OSD Language (Set up Language)		Yes
			Output (RGB/Composite)		No
		Open			Yes
		Close			Yes
		No disc			Yes
		Reading			Yes
		Play			Yes
		Still/Pause			Yes
		Stop			Yes
		Prohibit Mark			Yes
		Step			Yes
		Skip (>>|)			Yes
		Skip (|<<)			Yes
		Random			Yes (CD, VIDEO CD,SVCD MP3, WMA, JPEG)
		Repeat			Yes
		Slow+ ##			Yes
		Slow- ##			No
		Search+ ##			Yes
		Search- ##			Yes
		Jump			Yes
		Resume			Yes
		Title No.			Yes
		Chapter No.			Yes
		Track No.			Yes
		Time			Yes
		Sub Title No.			Yes
		Angle No.			Yes
		Vocal On/Off			Yes
		Audio No.			Yes
		Audio Stereo L/R			Yes (VIDEO CD, SVCD)
		Zoom			Yes
		Marker No.			Yes
		Spatializer (N-2-2)			Yes
		Program Play Back			Yes (CD, VIDEO CD, SVCD, MP3, WMA, JPEG)
		MP3/WMA/JPEG		Folder Name	Yes
				File Name	Yes
				File No	Yes
				Time	Yes (MP3, WMA Only)
				Track No	Yes
		Progressive Scan Out ON/OFF			Yes

GENERAL SPECIFICATIONS

	On Screen Display(VCR)	Menu			Yes
			Menu Type		Character
			Timer Rec Set		Yes
			Auto Repeat On/Off		Yes
			SAP On/Off		Yes
			CH Set-Up		Yes
				TV/CATV	Yes
				Auto CH Memory	Yes
				Add/Delete	Yes
			System Set Up		Yes
				Clock Set	Yes (Calendar 12H)
				Language	Yes
				No Noise Back Ground	Yes
				Auto Clock	Yes
				Standard Time	Yes
				Daylight Saving Time	Yes
		G-CODE (or SHOWVIEW or PLUSCODE) No. Entry			No
		Stereo, Audio Output, SAP			Yes
		Play/Stop/FF/Rew/Rec/OTR(ITR)/T-Rec/Pause/Eject/Tape In (Symbol Mark)			Yes
				CH/AV (LINE)	Yes
				Clock	Yes
				Repeat	Yes
				Tape Counter	Yes
				Index	Yes
				Tape Speed	Yes
				ATR / Manual Tracking	Yes
				Hi-Fi	Yes
				Zero Return	Yes
G-11	**OSD Language**		DVD OSD		Eng Fre Spa
			VCR OSD		Eng Fre Spa
G-12	**Clock,Timer and Timer Back-up**	Calendar			1990/1/1 ~ 2081/12/31
		Timer Events			8 Program/ 1 Month
		One Touch Recording Max Time			6 Hours
		OTPB Valid Time			No
		Timer Back-up (at Power Off Mode)			5 sec
G-13	**Display**	DISPLAY			Yes
				DISPLAY type	LED Module (Amber, "Rec" &Timer symbol = Red)
				Clock/Counter,CH,Timer Rec,OTR, Play Rec,FF(Cue),Rew(Rev),Stop,ATR,Eject	No
				VCR	Yes
				DVD	Yes
				CD	Yes
				Clock	Yes (12h)
				AM	No
				PM	Yes
				Counter VCR	Yes (hour:min)
				DVD	Yes (hour:min)
				CD	Yes (min:sec)
				Eject	Yes
				Counter Remain	No
				Play	Yes
				Stop	No
				Rec	Yes
				FF / Cue	No
				REW /Review	No
				Pause/Still	Yes
				OTR	No
				T-Rec	Yes
				Chapter	No
				TITLE	No
				TRACK	Yes
				Repeat	No
				Hi-Fi	No
				SP	No
				LP	No
				SLP	No
				CH	Yes
				RF Output CH	Yes
				Tape In	Yes
				Remocon Custom Code	No
				Progressive Scan Out	Yes

GENERAL SPECIFICATIONS

G-14	**Remote Control**	Unit		RC-HL
		Glow in Dark Remocon		Yes
		Format		NEC (TOSHIBA)
		Custom Code		45-BA
		Power Source	Voltage(D.C)	3V
			UM size x pcs	UM-4 x 2 pcs
		Total Keys		46 Key
		Keys	Power	Yes
			DISPLAY/CALL	Yes
			1	Yes
			2	Yes
			3	Yes
			4	Yes
			5	Yes
			6	Yes
			7	Yes
			8	Yes
			9	Yes
			0	Yes
			Input Select	No
			Input Select / PROGRESSIVE	Yes
			UP/ SET+ / TRACKING+	Yes
			DOWN/ SET- / TRACKING-	Yes
			LEFT/CH-	Yes
			RIGHT/CH+	Yes
			VCR/DVD	Yes
			TV/VCR	Yes
			DVD MENU	Yes
			TITLE (TOP MENU)	Yes
			SETUP MENU/VCR MENU	Yes
			SELECT/ENTER	Yes
			CLEAR/CANCEL	Yes
			RETURN	Yes
			PLAY	Yes
			STOP	Yes
			PAUSE/STILL/STEP	Yes
			FF(Cue)/SEARCH+	Yes
			REW(Review)/SEARCH-	Yes
			REC/OTR	Yes
			SKIP+ / INDEX+	Yes
			SKIP- / INDEX-	Yes
			AUDIO / AUDIO SELECT	Yes
			ANGLE/COUNTER RESET	Yes
			SUB TITLE/ATR	Yes
			PLAY MODE/SPEED	Yes
			T-REC	Yes
			CLOCK / COUNTER	Yes
			JUMP/ZERO RETURN	Yes
			ZOOM/CM SKIP	Yes
			REPEAT A-B	Yes
			SLOW(Forward)	Yes
			MARKER	Yes
			OPEN/CLOSE	Yes
			EJECT	Yes

GENERAL SPECIFICATIONS

G-15	**Features (DVD)**	Auto Power Off		No
		Parental Lock		Yes
		Video CD Playback		Yes
		MP3 Playback		Yes
		WMA Playback		Yes
		JPEG Playback		Yes
		Progressive Scan Out		Yes
		Digital Out	Dolby Digital	Yes
			MPEG	Yes
			PCM	Yes
			DTS	Yes
		Down Mix Out	(Dolby Digital)	Yes
			(DTS)	No
		Spatializer (N-2-2)		Yes
		Screen Saver		Yes
		Auto Stop		No
		Tray Lock		Yes
		Audio DAC		192kHz / 24bit
	Features (VCR)	Auto Head Cleaning		Yes
		Auto Tracking		Yes
		HQ (VHS Standard High Quality)		Yes
		Auto Power On, Auto Play, Auto Rewind, Auto Eject		Yes
		Auto Power Off		No
		Forward/Reverse Picture Search		Yes
		VIDEO PLUS+ (SHOWVIEW, G-CODE)		No
		One Touch Playback		No
		Auto CH Memory		Yes
		AREA CODE		No
		Auto Clock Set		Yes
		Index Search		Yes
		SQPB (Option)		Yes
		CATV		Yes
		Energy Star		No
		MTS (SAP)		Yes
		CM Skip (30sec x 6 Times)		Yes
		Copy Disc to Tape		Yes (by Conditioning)
G-16	**Accessories**	Owner's Manual	Language	English
			w/Guarantee Card	Yes
			Buyer Model No.	SD-V392
		Remote Control Unit		Yes
		Guarantee Card		No
		Registration Card		Yes
		Warning Sheet		No
		Service Station List		No
		Important Tag		No
		AC Plug Adapter		No
		Quick Set-up Sheet		Yes (Spanish)
		Battery		Yes
			UM size x pcs	UM-4 x 2 pcs
		AC Cord		No
		AV Cord (1.2m)		Yes
		75 Ohm Coaxial Cable (0.9m)		Yes
		S-Video Cable		No
		21pin cable		No
		800 No Sticker		No
		Toll Free Insert Sheet		No
		Safety Tip		No
		Sheet Information (Return)		Yes
		Netflix Card		Yes

GENERAL SPECIFICATIONS

G-17	**Interface**	Switch	Front	Power	Yes
				Play	Yes
				Eject (VCR)	Yes
				Stop	Yes
				Rec/OTR	Yes
				Open/Close (DVD)	Yes
				CH +	Yes
				CH -	Yes
				FF/ Search(>>)	Yes
				Rew/Search(<<)	Yes
				Still/Pause	No
				Shuttle (Search/REV/FWD)	No
				DVD/VCR	Yes
				Main Power SW	No
			Rear	Attenuator	No
				S-Video/Component Video Selector	Yes
				RF Out (Slide SW)	No
				Main Power SW	No
		Volume		Phones Volume	No
				Mic Volume	No
				Echo Volume	No
				Rec/OTR	No
		Terminals	Front	Video In	RCA x 1 (Black/Silver)
				Audio In	RCA x 2 (Stereo, Black/Silver)
			Rear	Video Output	RCA x1 (Yellow) S-Video x 1 (DVD Signal Only) Component x1 (RCA 3pin, DVD Signal Only)
				Audio Output	RCA x 4(Stereo, Red/White) Coaxial x 1 (Digital Audio, DVD Signal Only)
				Optical Out (Option)	Yes (Digital Audio, DVD Signal Only)
				Video Input (Option)	RCA x 1 (Yellow)
				Audio Input (Option)	RCA x 2 (Stereo, Red/White)
				RF Input / Output	Yes
				Euro Scart	No
				AC Inlet	No
		Indicator	LED	Power	No
				Rec	No
				T-Rec	No
				TV/VCR	No
				DVD	Yes (GREEN)
				VCR	Yes (GREEN)
				Surround	No
				Level Meter	No
G-18	**Set Size**			Approx. W x D x H (mm)	430 x 250.5 x 99
G-19	**Weight**			Net (Approx.)	3.6kg (7.9lbs)
				Gross (Approx.)	4.7kg (10.4lbs)
G-20	**Carton**		Master Carton		No
				Content	--- Sets
				Material	--- / ---
				Dimensions W x D x H(mm)	---
				Description of Origin	---
			Gift Box		Yes
				Material	Double / White
				W/Color Photo Label	No
				Dimensions W x D x H(mm)	497 x 360 x 180
				Design	As Per BUYER 's
				Description of Origin	Yes
				Buyer Model No.	SD-V392
			Drop Test	Natural Dropping At	1 Corner / 3 Edges / 6 Surfaces
				Height (cm)	80 cm
			Container Stuffing		1,985 Sets/40' container
G-21	**Cabinet Material**		Cabinet	Front	PS 94V2 or More / DECABROM
			PCB	Non-Halogen Demand	No
				Eyelet Demand	No
G-22	**Environment**		Pb Free	Lead-free Solder	No
				Other	No
			Cd Free		No

DISASSEMBLY INSTRUCTIONS

1. REMOVAL OF MECHANICAL PARTS AND P.C. BOARDS

1-1: TOP CABINET, FRONT CABINET, OPERATION 1/2 PCB AND FRONT JACK PCB (Refer to Fig. 1-1)

1. Remove the 5 screws ①.
2. Remove the Top Cabinet in the direction of arrow (A).
3. Disconnect the following connectors: (CP651 and CP652).
4. Unlock the 8 supports ②.
5. Remove the Front Cabinet in the direction of arrow (B).
6. Remove the 11 screws ③.
7. Remove the Operation 1/2 PCB and Front Jack PCB in the direction of arrow (C).
8. Remove the 3 Pin Shield.

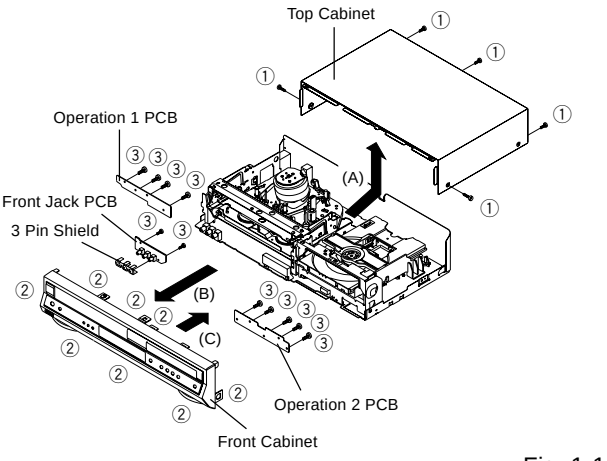


Fig. 1-1

1-2: FLAP (Refer to Fig. 1-2)

1. Open Flap to 90˚ and flex in direction of arrow (A), at the same time slide in direction of arrow (B).
2. Then lift in direction of arrow (C).

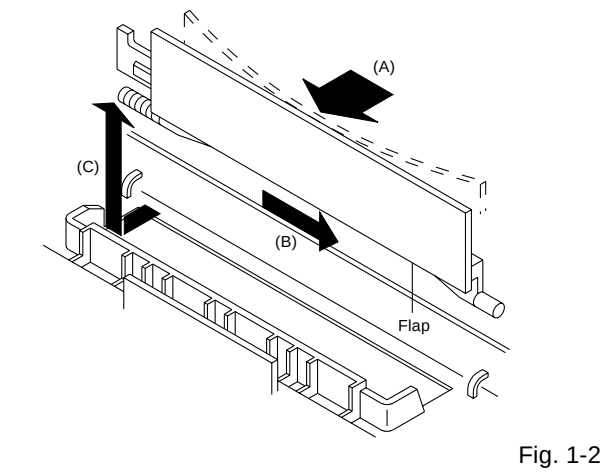


Fig. 1-2

1-3: DVD DECK (Refer to Fig. 1-3)

1. Make the short circuit on the position as shown **Fig. 1-3** using a soldering. If you remove the DVD Deck with no soldering, the Laser may be damaged.
2. Unlock the support ① and remove the Deck Top Holder in the direction of arrow (A).
3. Remove the 3 screws ②.
4. Remove the screw ③.
5. Disconnect the following connectors: (CP2601, CP2602 and CP2603).
6. Remove the DVD Deck in the direction of arrow (B).
7. Remove the 3 screws ④.
8. Remove the Front Angle in the direction of arrow (C).
9. Remove the screw ⑤.
10. Remove the DVD Angle.

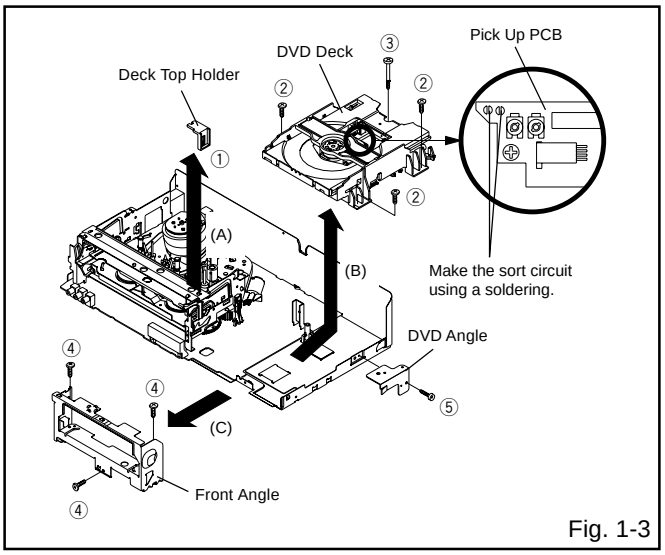


Fig. 1-3

NOTE

When the installation of the DVD Deck, remove all the soldering on the short circuit position after the connection of Pick Up PCB and DVD PCB connector.

DISASSEMBLY INSTRUCTIONS

1-4: DVD PCB (Refer to Fig. 1-4)

1. Remove the 3 screws ①.
2. Remove the 4 screws ②.
3. Disconnect the following connectors:
   (CP4002 and CP8102).
4. Remove the DVD PCB in the direction of arrow.

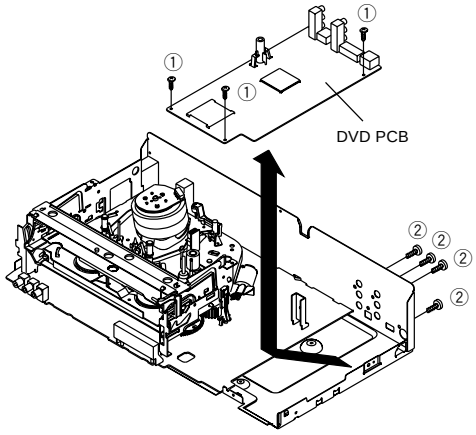


Fig. 1-4

1-5: VCR DECK (Refer to Fig. 1-5)

NOTE

Do not remove the cable at the FE Head section. The FE Head may be damaged if you remove the cable by force.

1. Move the Cassette Holder Ass'y to the back side.
2. Remove the screw ①.
3. Remove the FE Head.
4. Remove the 3 screws ②.
5. Disconnect the following connectors:
   (CP101, CP102, and CP3001).
6. Remove the AC Head Cover and VCR Deck in the direction of arrow.

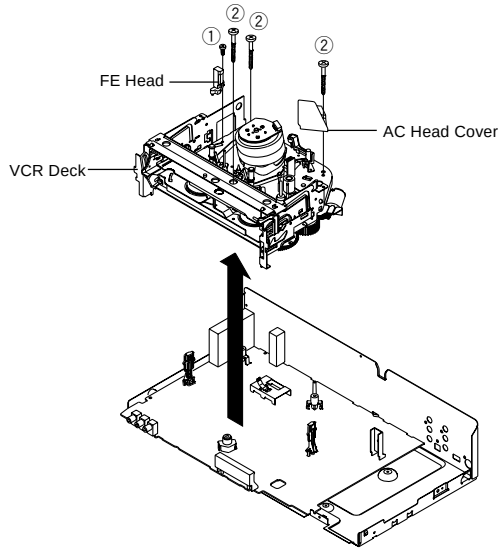


Fig. 1-5

1-6: VCR PCB (Refer to Fig. 1-6)

1. Remove the screw ①.
2. Remove the 2 screws ②.
3. Remove the screw ③.
4. Remove the VCR PCB in the direction of arrow.

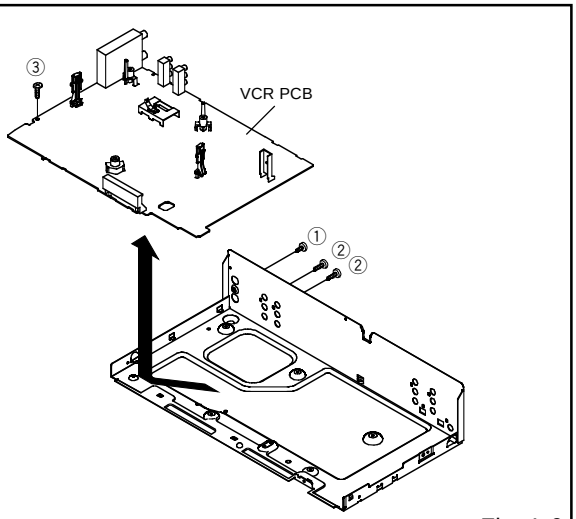


Fig. 1-6

DISASSEMBLY INSTRUCTIONS

2. REMOVAL OF VCR DECK PARTS

2-1: TOP BRACKET (Refer to Fig. 2-1)

1. Extend the 2 supports ①.
2. Slide the 2 supports ② and remove the Top Bracket.

NOTE

1. After the installation of the Top Bracket, bend the support ① so that the Top Bracket is fixed.

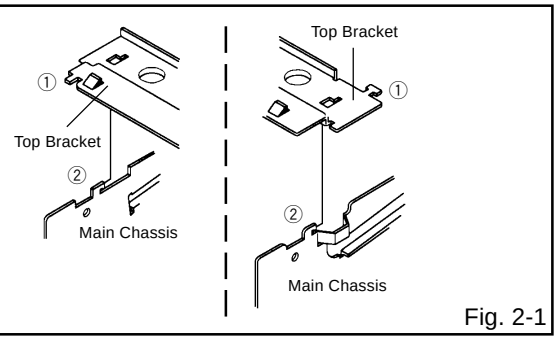


Fig. 2-1

2-2: CASSETTE HOLDER ASS'Y (Refer to Fig. 2-2)

1. Move the Cassette Holder Ass'y to the front side.
2. Push the Locker R to remove the Cassette Side R.
3. Remove the Cassette Side L.

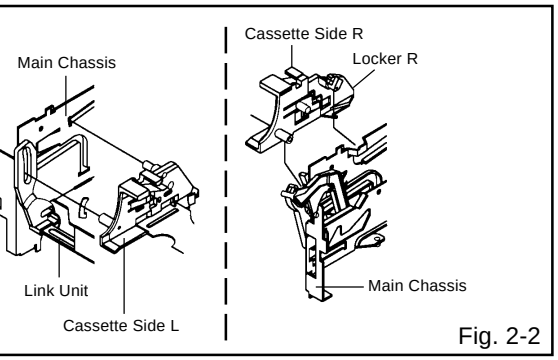


Fig. 2-2

2-3: CASSETTE SIDE L/R (Refer to Fig. 2-3-A)

1. Remove the Locker Spring.
2. Unlock the 4 supports ① and then remove the Cassette Side L/R.
3. Unlock the support ② and then remove the Locker R.

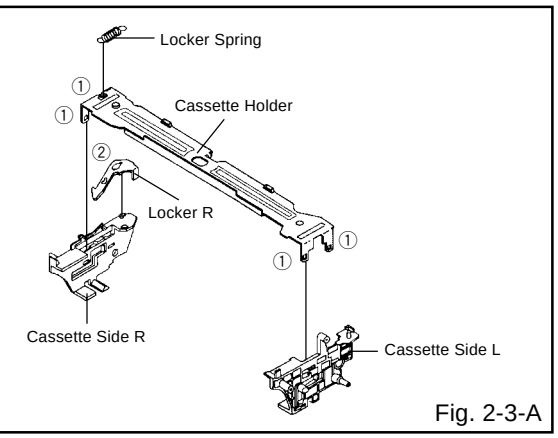


Fig. 2-3-A

NOTE

1. In case of the Locker R installation, check if the one position of Fig. 2-3-B are correctly locked.
2. When you install the Cassette Side R, be sure to move the Locker R after installing.

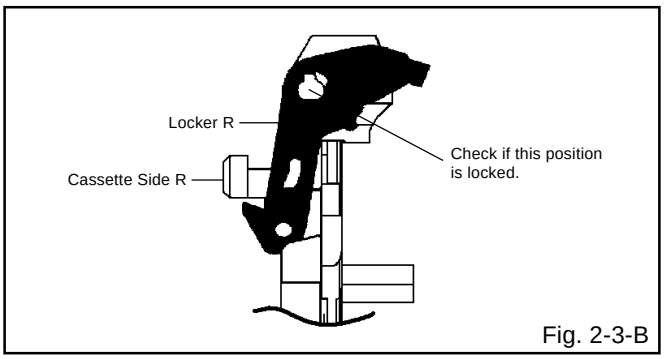


Fig. 2-3-B

2-4: LINK UNIT (Refer to Fig. 2-4)

1. Set the Link Unit to the Eject position.
2. Unlock the support ①.
3. Remove the (A) side of the Link Unit first, then remove the (B) side.

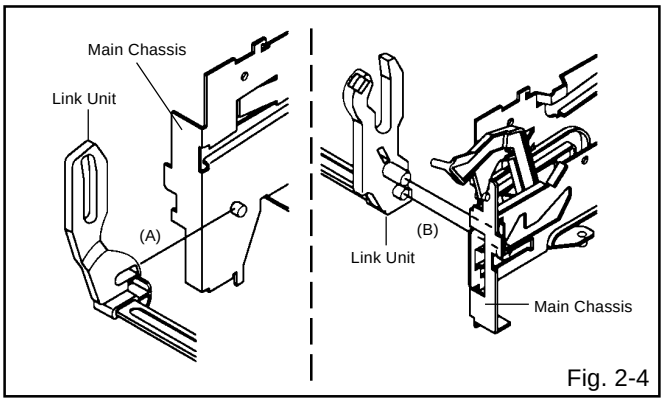


Fig. 2-4

2-5: LINK LEVER/FLAP LEVER (Refer to Fig. 2-5)

1. Extend the support ①.
2. Remove the Link Lever.
3. Remove the Flap Lever.

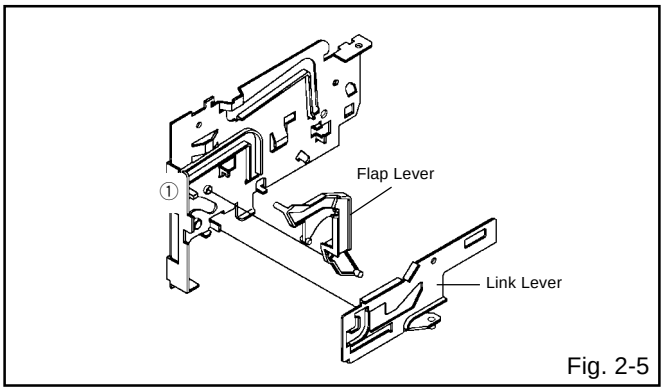


Fig. 2-5

DISASSEMBLY INSTRUCTIONS

2-6: LOADING MOTOR/WORM (Refer to Fig. 2-6-A)

1. Remove the screw ①.
2. Remove the Loading Motor.
3. Remove the Worm.

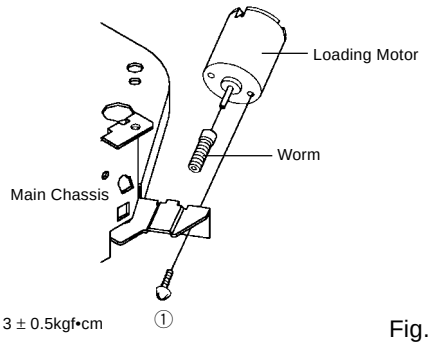


Fig. 2-6-A

NOTE

1. In case of the Worm installation, check if the value of the Fig. 2-6-B is correct.
2. In case of the Loading Motor installation, hook the wire on the Cassette Opener as shown Fig. 2-6-C.
3. When installing the wires between Capstan DD Unit and Loading Motor, connect them correctly as shown Fig. 2-6-D.

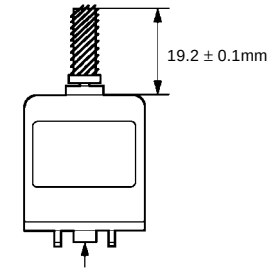


Fig. 2-6-B

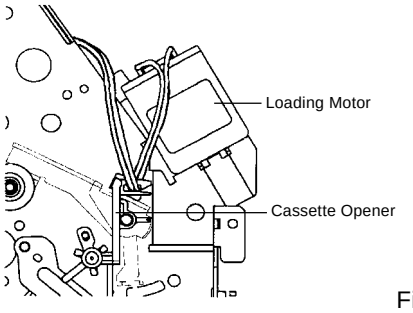


Fig. 2-6-C

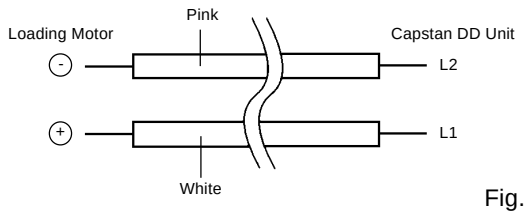


Fig. 2-6-D

2-7: TENSION ASS'Y (Refer to Fig. 2-7-B)

1. Turn the Pinch Roller Cam clockwise so that the Tension Holder hook is set to the position of Fig. 2-7-A to move the Tension Arm Ass'y.
2. Remove the Tension Spring.
3. Unlock the 2 supports ① and remove the Tension Band.
4. Unlock the support ② and remove the Tension Arm Ass'y.
5. Unlock the support ③ and remove the Tension Connect.
6. Float the hook ④ and turn it clockwise then remove the Tension Holder.

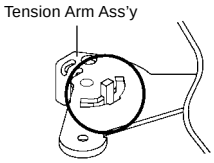


Fig. 2-7-A

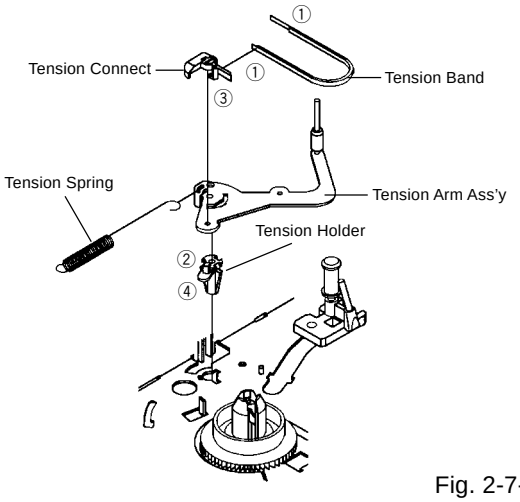


Fig. 2-7-B

NOTE

1. In case of the Tension Band installation, note the direction of the installation. **(Refer to Fig. 2-7-C)**
2. In case of the Tension Band installation, install correctly as Fig. 2-7-D.
3. In case of the Tension Connect installation, install as the circled section of Fig. 2-7-E.

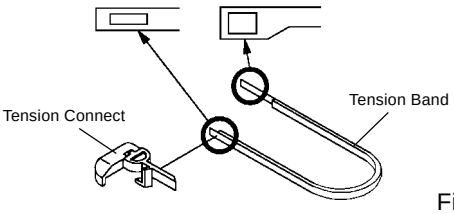


Fig. 2-7-C

DISASSEMBLY INSTRUCTIONS

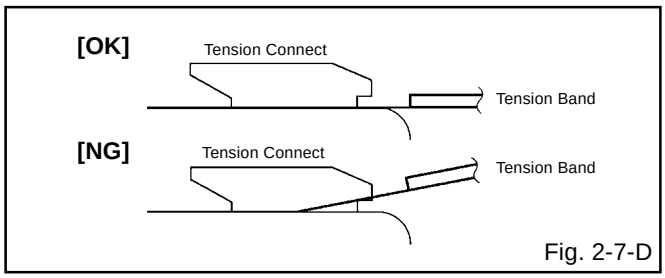


Fig. 2-7-D

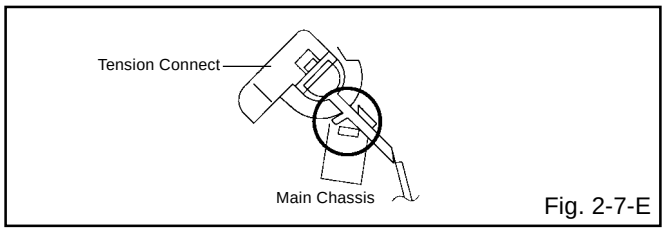


Fig. 2-7-E

2-8: T BRAKE ARM/T BRAKE BAND (Refer to Fig. 2-8-A)

1. Remove the T Brake Spring.
2. Turn the T Brake Arm clockwise and bend the hook section to remove it.
3. Unlock the 2 supports ① and remove the T Brake Band.

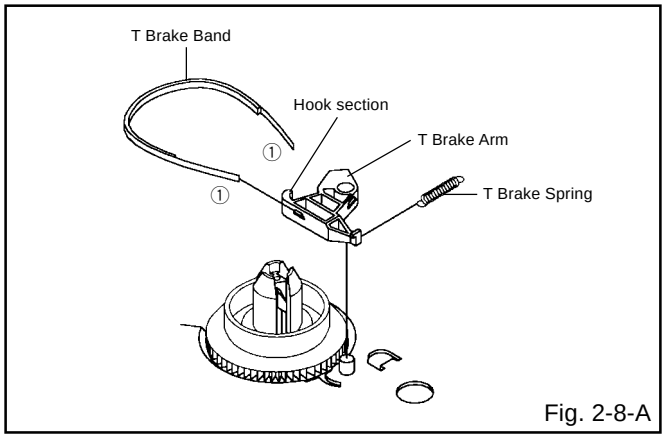


Fig. 2-8-A

NOTE

1. In case of the T Brake Band installation, install correctly as Fig. 2-8-B.

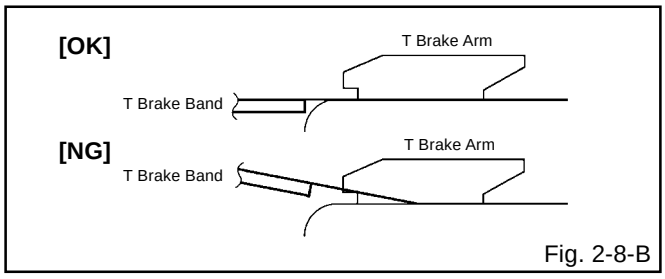


Fig. 2-8-B

2-9: S REEL/T REEL/IDLER ARM ASS'Y/IDLER GEAR (Refer to Fig. 2-9-A)

1. Remove the S Reel and T Reel.
2. Remove the 2 Polyslider Washers ①.
3. Remove the Idler Arm Ass'y and Idler Gear.

NOTE

1. Take care not to damage the gears of the S Reel and T Reel.
2. The Polyslider Washer may be remained on the back of the reel.
3. Take care not to damage the shaft.
4. Do not touch the section "A" of S Reel and T Reel. (Use gloves.) **(Refer to Fig. 2-9-A)** Do not adhere the stains on it.
5. When you install the reel, clean the shaft and grease it. (If you do not grease, noise may be heard in FF/REW mode.)
6. After installing the reel, adjust the height of the reel. **(Refer to MECHANICAL ADJUSTMENT)**

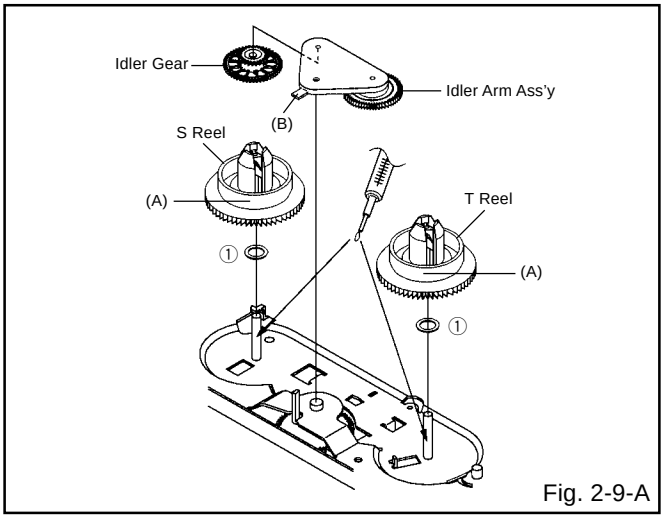


Fig. 2-9-A

NOTE

1. In case of the S Reel and T Reel installation, check if the correct parts are installed. **(Refer to Fig. 2-9-B)**
2. In case of the Idler Arm Ass'y installation, install correctly as Fig. 2-9-C. And also set it so that the section "B" of Fig. 2-9-A is placed under the Main Chassis tab.

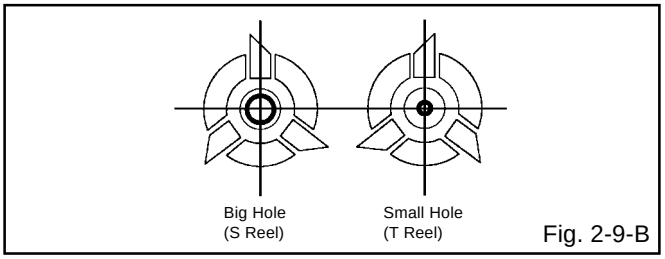


Fig. 2-9-B

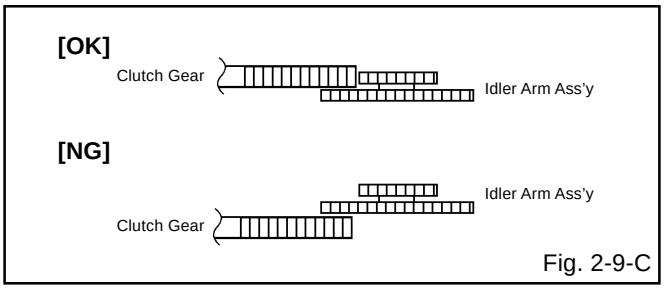


Fig. 2-9-C

DISASSEMBLY INSTRUCTIONS

2-10: CASSETTE OPENER/PINCH ROLLER BLOCK/P5 ARM ASS'Y (Refer to Fig. 2-10-A)

1. Unlock the support ① and remove the Cassette Opener.
2. Remove the Pinch Roller Block and P5 Arm Ass'y.

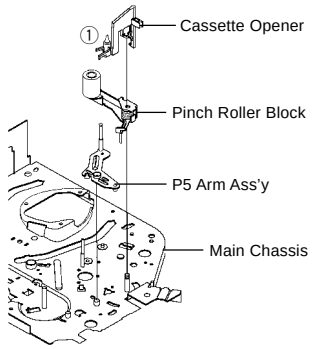


Fig. 2-10-A

NOTE

1. Do not touch the Pinch Roller. (Use gloves.)
2. In case of the Pinch Roller Block and the Pinch Roller Cam installation, install correctly as Fig. 2-10-B.

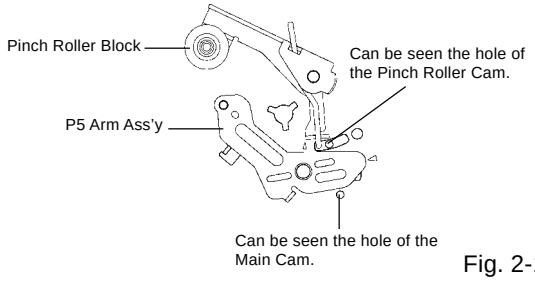


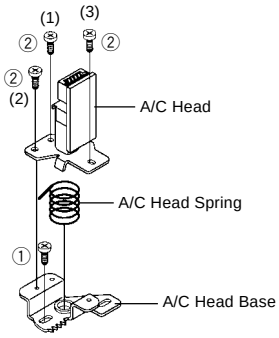
Fig. 2-10-B

2-11: A/C HEAD (Refer to Fig. 2-11-A)

1. Remove the screw ①.
2. Remove the A/C Head Base.
3. Remove the 3 screws ②.
4. Remove the A/C Head and A/C Head Spring.

NOTE

1. Do not touch the A/C Head. (Use gloves.)
2. When you install the A/C Head Spring, install as shown in Fig. 2-11-B.
3. When you install the A/C Head, tighten the screw (1) first, then tighten the screw (2), finally tighten the screw (3).



• Screw Torque: 5 ± 0.5kgf•cm (Screw ①)

Fig. 2-11-A

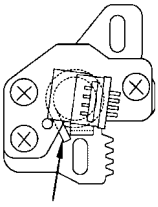
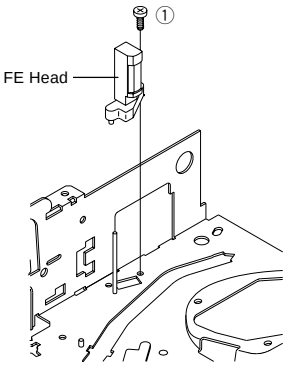


Fig. 2-11-B

2-12: FE HEAD (RECORDER ONLY) (Refer to Fig. 2-12)

1. Remove the screw ①.
2. Remove the FE Head.



• Screw Torque: 5 ± 0.5kgf•cm
• The FE Head is not installed on the Video Cassette Player.

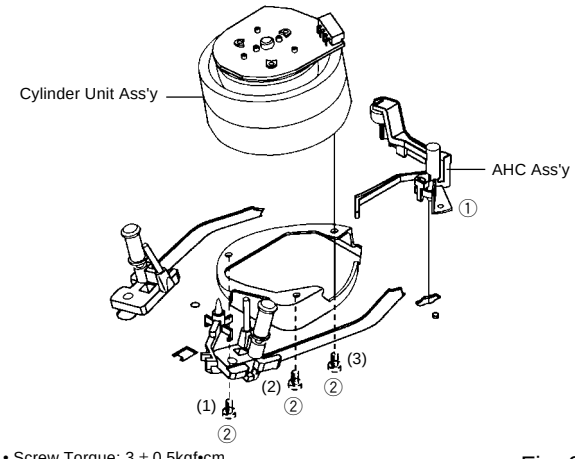
Fig. 2-12

2-13: AHC ASS'Y/CYLINDER UNIT ASS'Y (Refer to Fig. 2-13)

1. Unlock the support ① and remove the AHC Ass'y.
2. Disconnect the following connector: (CD2001)
3. Remove the 3 screws ②.
4. Remove the Cylinder Unit Ass'y.

NOTE

1. When you install the Cylinder Unit Ass'y, tighten the screws from (1) to (3) in order while pulling the Ass'y toward the left front direction.



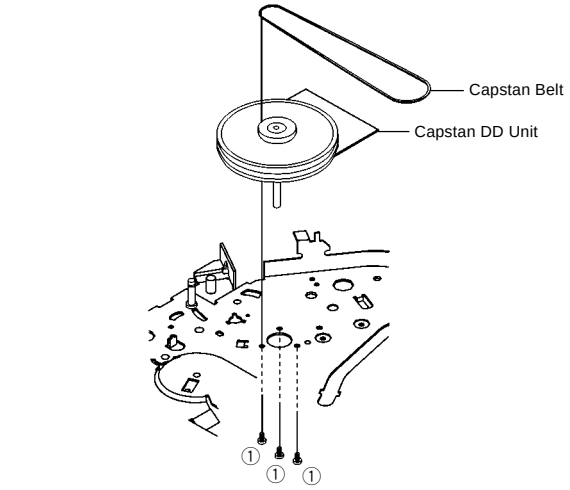
• Screw Torque: 3 ± 0.5kgf•cm

Fig. 2-13

DISASSEMBLY INSTRUCTIONS

2-14: CAPSTAN DD UNIT (Refer to Fig. 2-14-A)

1. Remove the Capstan Belt.
2. Remove the 3 screws ①.
3. Remove the Capstan DD Unit.



• Screw Torque: 4 ± 0.5kgf•cm

Fig. 2-14-A

NOTE

1. In case of the Capstan DD Unit installation, apply the silicon bond (TSE3843-W) on the position Fig. 2-14-B correctly. (If no silicon bond applied, abnormal noise will be heard on the deck operation.) **(Refer to Fig. 2-14-B, C)**

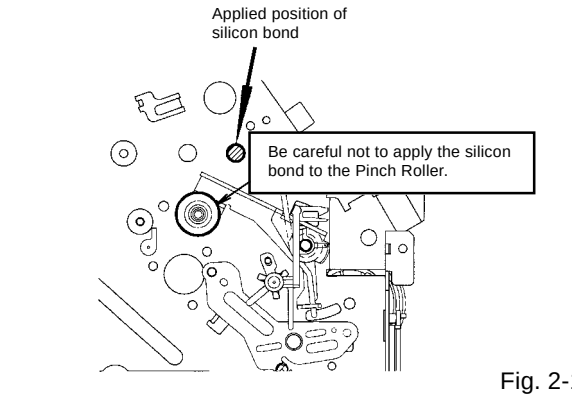


Fig. 2-14-B

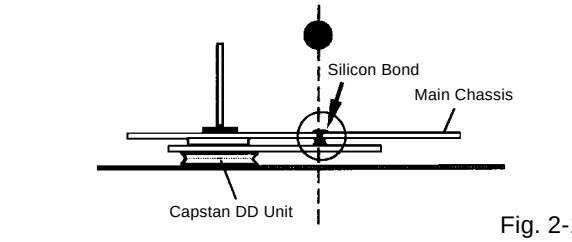


Fig. 2-14-C

2-15: MAIN CAM/PINCH ROLLER CAM/JOINT GEAR (Refer to Fig. 2-15-A)

1. Remove the E-Ring ①, then remove the Main Cam.
2. Remove the E-Ring ②, then remove the Pinch Roller Cam and Joint Gear.

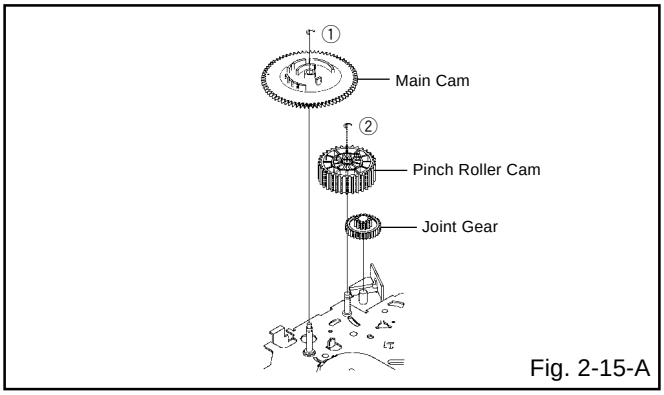


Fig. 2-15-A

NOTE

1. In case of the Pinch Roller Cam and Main Cam installation, install them as the circled section of Fig. 2-15-B so that the each markers are met. **(Refer to Fig. 2-15-B)** And also can be seen the Main Chassis hole through the Main Cam maker hole.

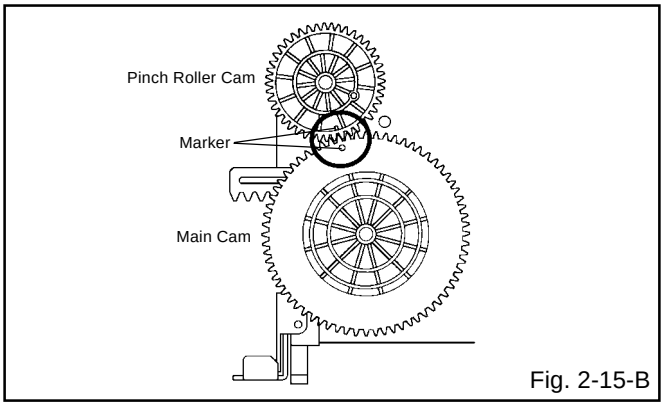


Fig. 2-15-B

2-16: LOADING GEAR S/T UNIT (Refer to Fig. 2-16-A)

1. Remove the E-Ring ① and remove the Main Loading Gear.
2. Remove the Main Rod, Tension Lever, Loading Arm S Unit and Loading Arm T Unit.

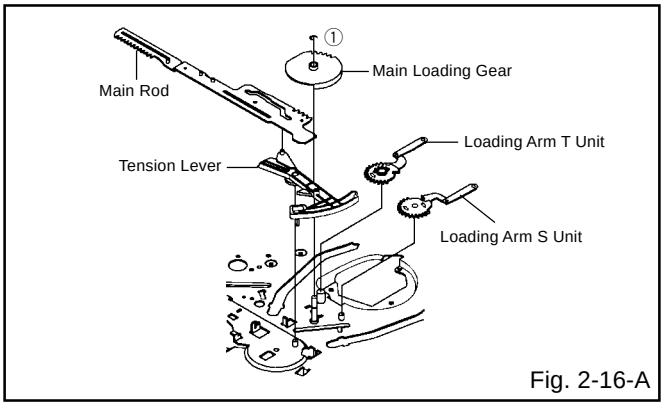


Fig. 2-16-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When you install the Loading Arm S Unit, Loading Arm T Unit and Main Loading Gear, align each marker. **(Refer to Fig. 2-16-B)**

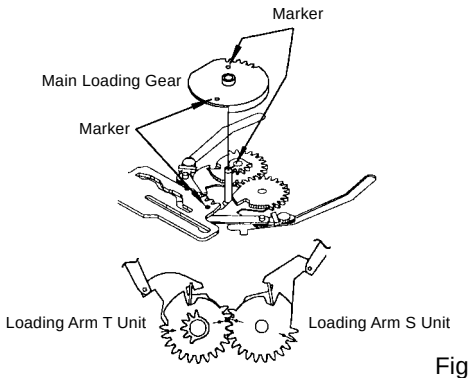


Fig. 2-16-B

2-17: CLUTCH ASS'Y/RING SPRING/CLUTCH LEVER/ CLUTCH GEAR (Refer to Fig. 2-17-A)

1. Remove the Polyslider Washer ①.
2. Remove the Clutch Ass'y and Ring Spring.
3. Remove the Clutch Lever.
4. Remove the Coupling Gear, Coupling Spring and Clutch Gear.

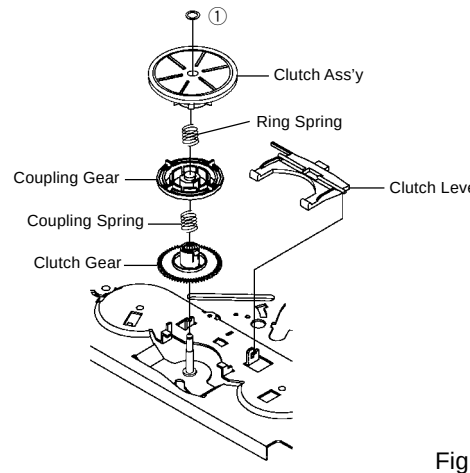


Fig. 2-17-A

NOTE

1. In case of the Clutch Ass'y installation, install it with inserting the spring of the Clutch Ass'y into the dent of the Coupling Gear. **(Refer to Fig. 2-17-B)**

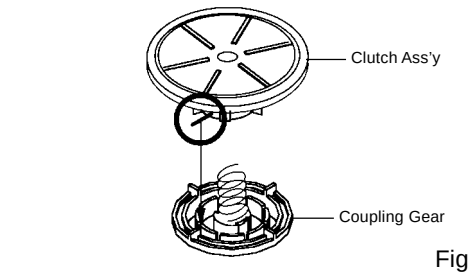


Fig. 2-17-B

2-18: CASSETTE GUIDE POST/INCLINED BASE S/T UNIT/P4 CAP (Refer to Fig. 2-18-A)

1. Remove the P4 Cap.
2. Unlock the support ① and remove the Cassette Guide Post.
3. Remove the Inclined Base S/T Unit.
4. Remove the screw ②.
5. Remove the LED Reflector.

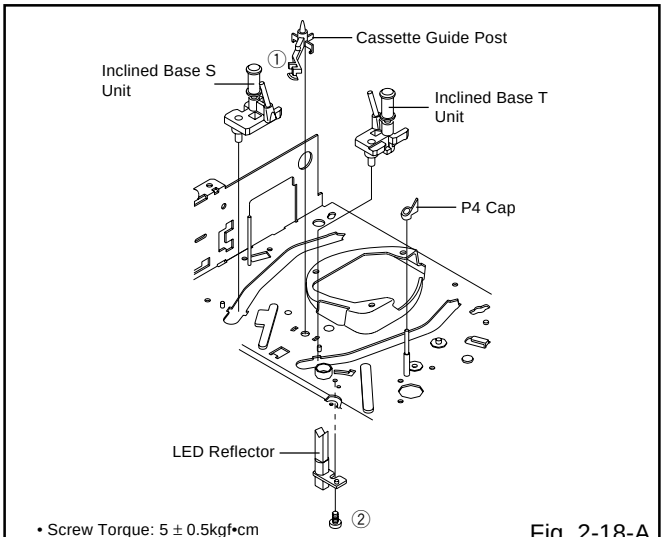


Fig. 2-18-A

NOTE

1. Do not touch the roller of Guide Roller.
2. In case of the P4 Cap installation, install it with parallel for "A" and "B" of Fig. 2-18-B.
3. In case of the Cassette Guide Post installation, install correctly as the circled section of Fig. 2-18-C.

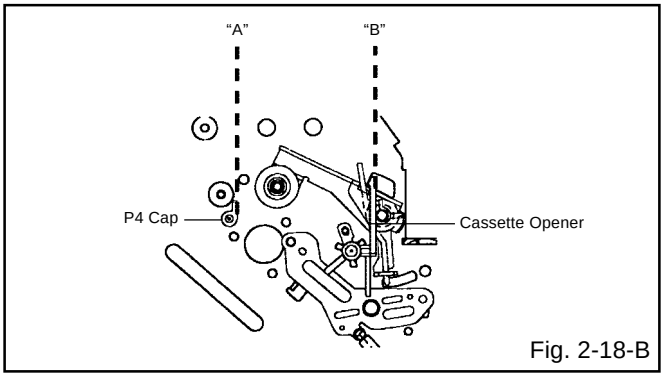


Fig. 2-18-B

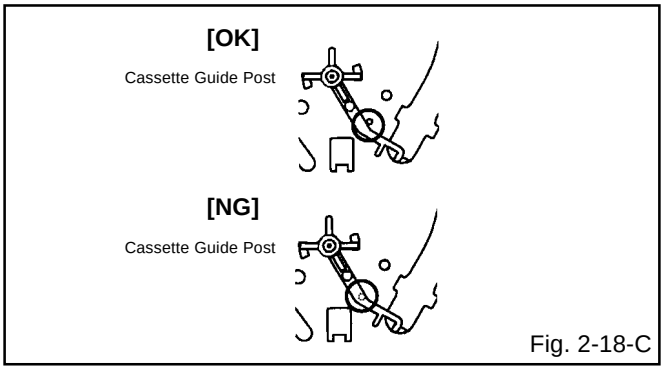


Fig. 2-18-C

DISASSEMBLY INSTRUCTIONS

3. REMOVAL OF DVD DECK PARTS

NOTE

1. Do not disassemble the DVD DECK PARTS except listed parts here. Minute adjustments are needed if the disassemble is done. If the repair is needed except listed parts, replace the DVD MECHA ASS'Y.

3-1: TRAY (Refer to Fig. 3-1-A)

1. Set the Tray opened. **(Refer to the DISC REMOVAL METHOD AT NO POWER SUPPLY)**
2. Unlock the support ① and remove the Tray.

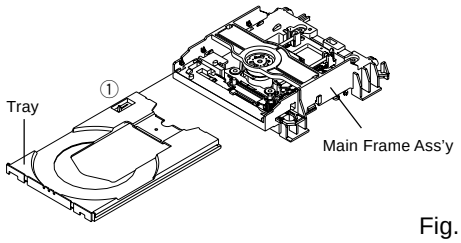


Fig. 3-1-A

NOTE

1. In case of the Tray installation, install them as the circled section of Fig. 3-1-B so that the each markers are met.

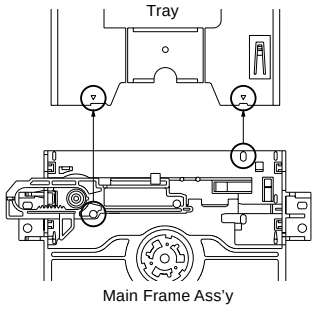


Fig. 3-1-B

3-2: MAIN CHASSIS ASS'Y (Refer to Fig. 3-2-A)

1. Remove the Main Chassis Ass'y from the Insulator (R).
2. Unlock the support ①.
3. Remove the Main Chassis Ass'y.

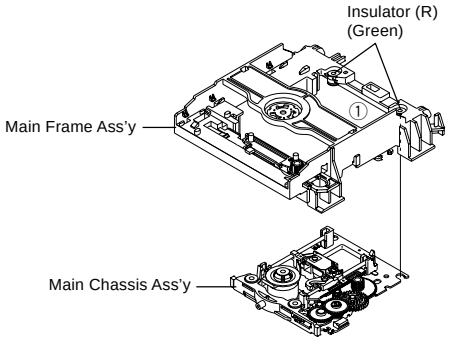


Fig. 3-2-A

NOTE

1. In case of the Main Chassis Ass'y, install it from (1) to (6) in order. **(Refer to Fig. 3-2-B)**

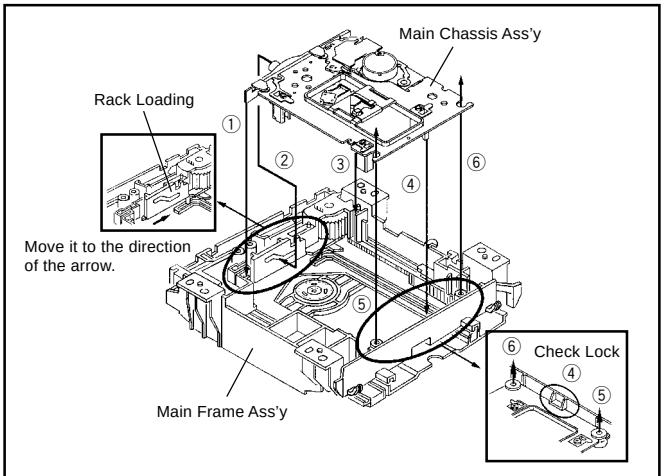


Fig. 3-2-B

3-3: RACK LOADING/MAIN GEAR/ RACK LOADING SPRING/ RACK L SPRING (Refer to Fig. 3-3)

1. Remove the Rack L Spring.
2. Press down the catcher ① and slide the Rack Loading.
3. Remove the Rack Loading, Rack Loading Spring and Main Gear.

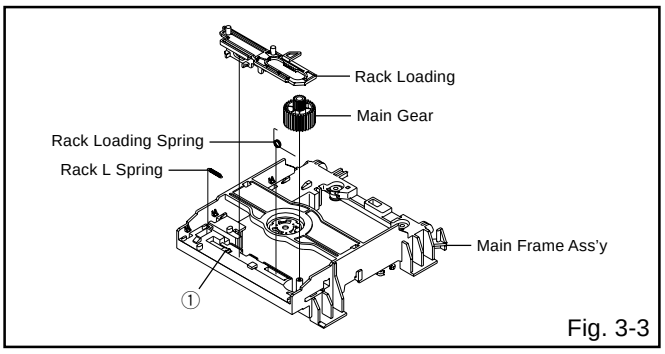


Fig. 3-3

3-4: CLAMPER ASS'Y/INSULATOR(R)/LEVER SWITCH (Refer to Fig. 3-4-A)

1. Remove the screw ①.
2. Remove the Lever Switch.
3. Remove the 2 Insulator (R).
4. Press the Clamper and rotate the Clamper Plate clockwise, then unlock the 3 supports ②.
5. Remove the Clamper Plate, Clamper Magnet and Clamper.

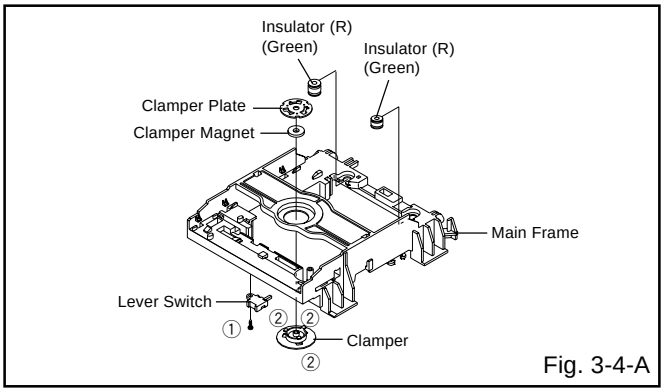


Fig. 3-4-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. When installing the Clamper Magnet, install it with the green face up.
2. When installing the wire of the Lever Switch, install it correctly as Fig. 3-4-B.
3. When installing the Lever Switch, install it correctly as Fig. 3-4-C.
4. In case of the Lever Switch installation, hook the wire on the Main Frame as shown Fig. 3-4-D.

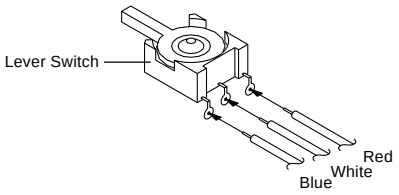


Fig. 3-4-B

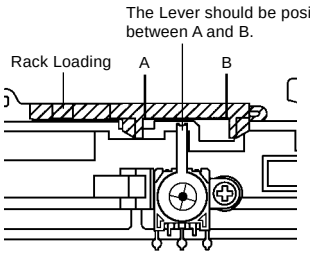


Fig. 3-4-C

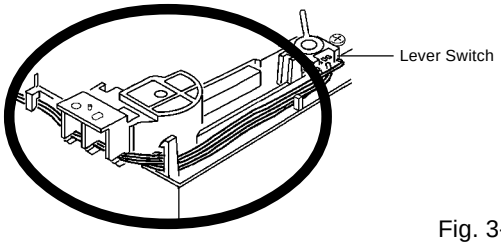


Fig. 3-4-D

3-5: TRAVERSE HOLDER/INSULATOR (F) (Refer to Fig. 3-5-A)

1. Remove the Traverse Holder.
2. Remove the 2 Insulator (F).

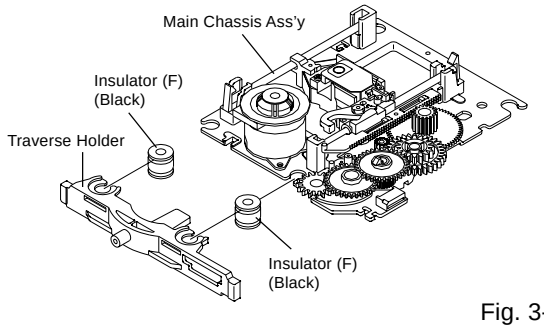


Fig. 3-5-A

NOTE

1. After the installing of the Traverse Holder, check if the wire is like Fig. 3-5-B.

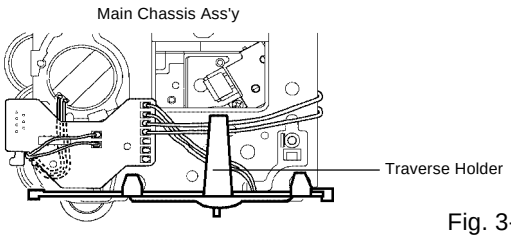


Fig. 3-5-B

3-6: SWITCH PCB ASS'Y (Refer to Fig. 3-6-A)

1. Remove the screw ①.
2. Remove the Switch PCB Ass'y.

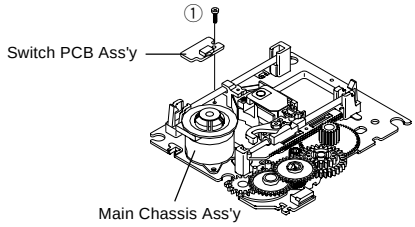


Fig. 3-6-A

NOTE

1. When installing the wire of the Switch PCB, install it correctly as Fig. 3-6-B.

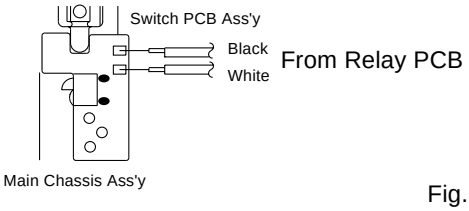


Fig. 3-6-B

3-7: RACK FEED ASS'Y (Refer to Fig. 3-7-A)

1. Remove the screw ①.
2. Remove the Rack Feed 1 Spring, Rack Feed 1/2 and Rack Feed Lever.

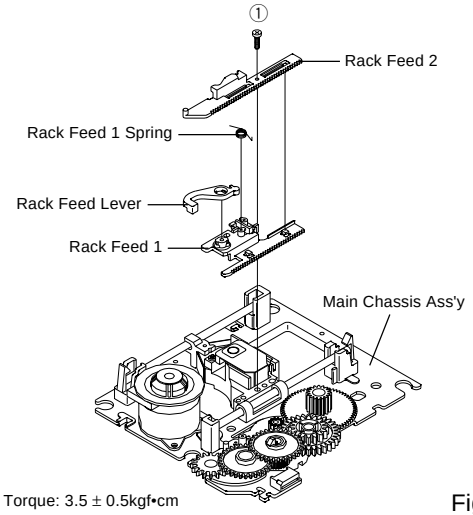


Fig. 3-7-A

DISASSEMBLY INSTRUCTIONS

NOTE

1. After the assembly of the Rack Feed, check if the Rack Feed 1/2 is moving smoothly. **(Refer to Fig. 3-7-B)**
2. In case of the Rack Feed Ass'y installation, install correctly as Fig. 3-7-C.

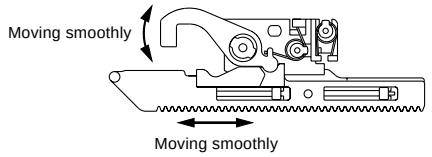


Fig. 3-7-B

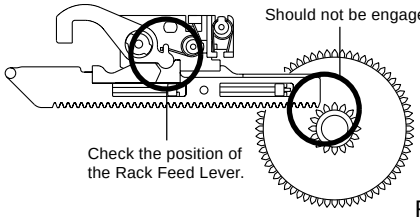


Fig. 3-7-C

3-8: RELAY PCB ASS'Y (Refer to Fig. 3-8-A)

1. Remove the screw ①.
2. Remove the Relay PCB Ass'y.

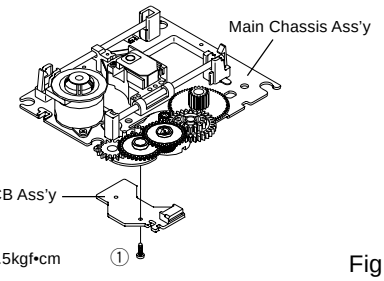


Fig. 3-8-A

NOTE

1. When installing the wire of the Relay PCB, install it correctly as Fig. 3-8-B.

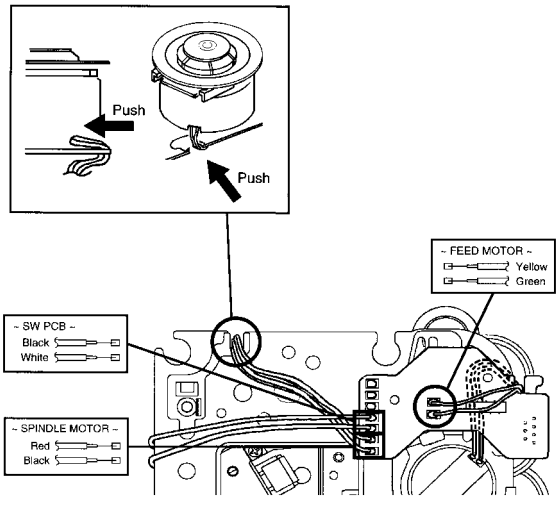


Fig. 3-8-B

3-9: GEAR (Refer to Fig. 3-9-A)

1. Unlock the support ①.
2. Remove the Middle Gear 1/2/3, Idler Gear and Feed Gear.

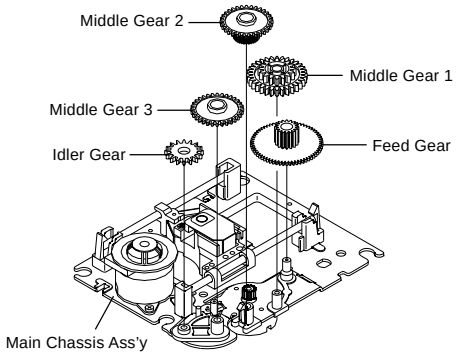


Fig. 3-9-A

NOTE

1. In case of the Idler Gear installation, install correctly as Fig. 3-9-B.
2. When installing the Middle Gear 2, check if the Middle Gear 2 is locked correctly as Fig. 3-9-C.

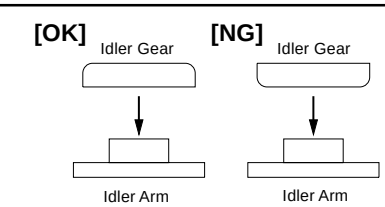


Fig. 3-9-B

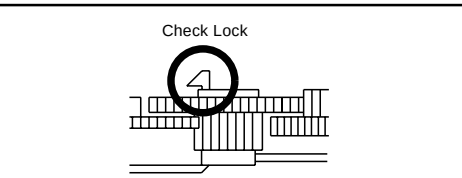


Fig. 3-9-C

3-10: IDLER ARM (Refer to Fig. 3-10)

1. Remove the Idler Arm.

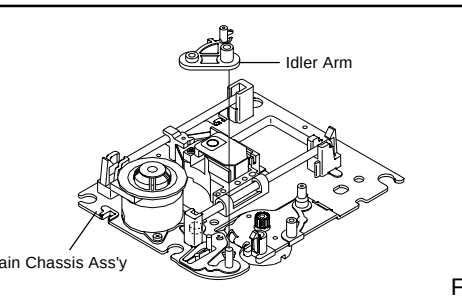
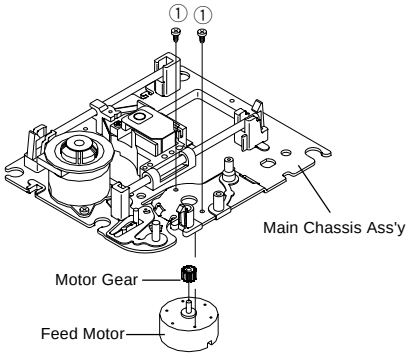


Fig. 3-10

DISASSEMBLY INSTRUCTIONS

3-11: FEED MOTOR (Refer to Fig. 3-11-A)

1. Remove the 2 screws ①.
2. Remove the Feed Motor.
3. Remove the Motor Gear.



• Screw Torque: 1 ± 0.5kgf•cm

Fig. 3-11-A

NOTE

1. In case of the Motor Gear installation, check if the value of the Fig. 3-11-B is correct.
2. When installing the Feed Motor, check if the cable is positioned as Fig. 3-11-C.

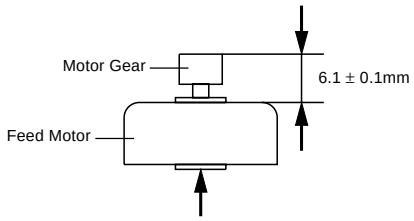


Fig. 3-11-B

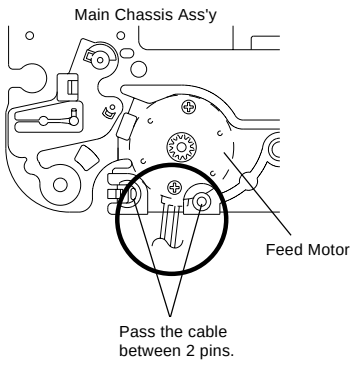


Fig. 3-11-C

DISASSEMBLY INSTRUCTIONS

4. REMOVAL AND INSTALLATION OF FLAT PACKAGE IC

REMOVAL

1. Put the Masking Tape (cotton tape) around the Flat Package IC to protect other parts from any damage. **(Refer to Fig. 4-1.)**

   NOTE

   Masking is carried out on all the parts located within 10 mm distance from IC leads.

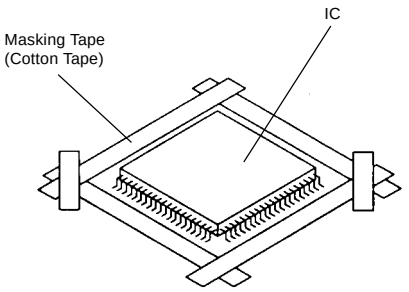


Fig. 4-1

2. Heat the IC leads using a blower type IC desoldering machine. **(Refer to Fig. 4-2.)**

   NOTE

   Do not add the rotating and the back and forth directions force on the IC, until IC can move back and forth easily after desoldering the IC leads completely.

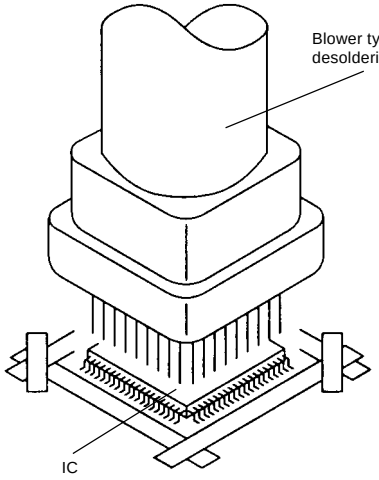


Fig. 4-2

3. When IC starts moving back and forth easily after desoldering completely, pickup the corner of the IC using a tweezers and remove the IC by moving with the IC desoldering machine. **(Refer to Fig. 4-3.)**

   NOTE

   Some ICs on the PCB are affixed with glue, so be careful not to break or damage the foil of each IC leads or solder lands under the IC when removing it.

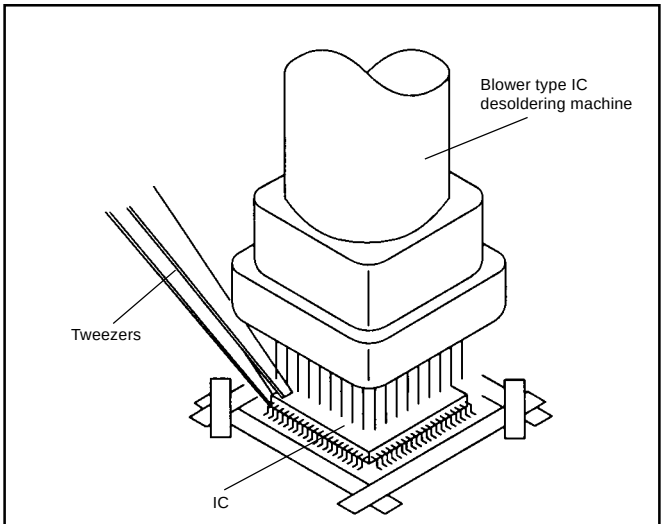


Fig. 4-3

4. Peel off the Masking Tape.
5. Absorb the solder left on the pattern using the Braided Shield Wire. **(Refer to Fig. 4-4.)**

   NOTE

   Do not move the Braided Shield Wire in the vertical direction towards the IC pattern.

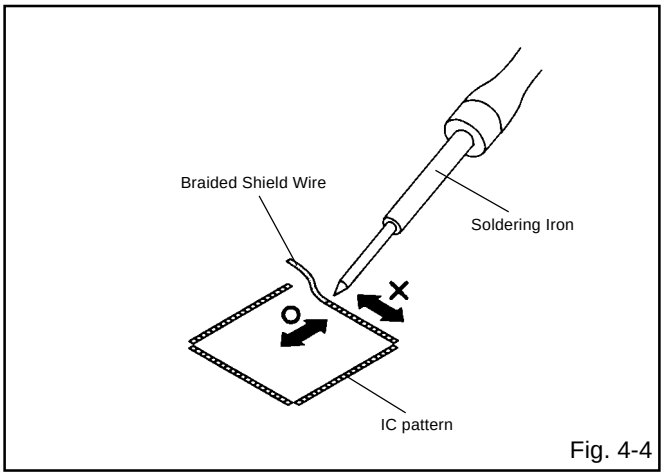


Fig. 4-4

DISASSEMBLY INSTRUCTIONS

INSTALLATION

1. Take care of the polarity of new IC and then install the new IC fitting on the printed circuit pattern. Then solder each lead on the diagonal positions of IC temporarily. **(Refer to Fig. 4-5.)**

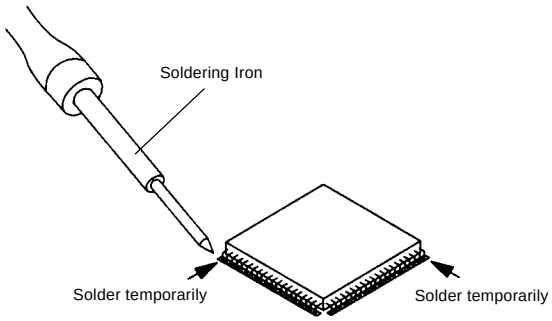


Fig. 4-5

2. Supply the solder from the upper position of IC leads sliding to the lower position of the IC leads. **(Refer to Fig. 4-6.)**

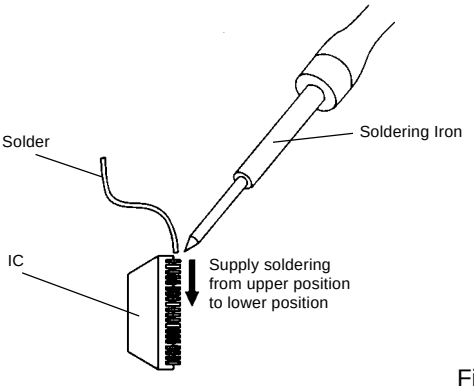


Fig. 4-6

3. Absorb the solder left on the lead using the Braided Shield Wire. **(Refer to Fig. 4-7.)**

   NOTE

   Do not absorb the solder to excess.

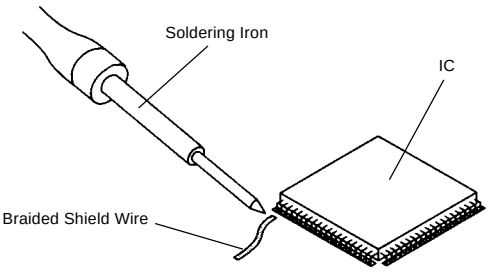


Fig. 4-7

4. When bridge-soldering between terminals and/or the soldering amount are not enough, resolder using a Thin-tip Soldering Iron. **(Refer to Fig. 4-8.)**

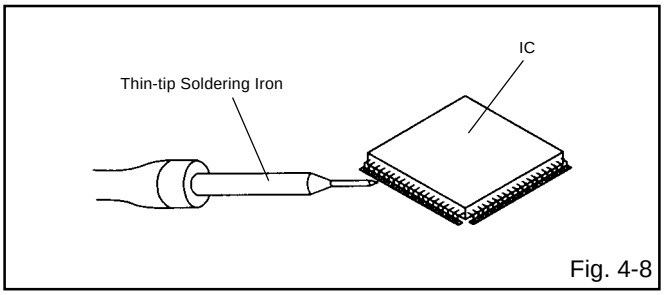


Fig. 4-8

5. Finally, confirm the soldering status on four sides of the IC using a magnifying glass.
   Confirm that no abnormality is found on the soldering position and installation position of the parts around the IC. If some abnormality is found, correct by resoldering.

   NOTE

   When the IC leads are bent during soldering and/or repairing, do not repair the bending of leads. If the bending of leads are repaired, the pattern may be damaged. So, be always sure to replace the IC in this case.

KEY TO ABBREVIATIONS

A	**A/C**	:	Audio/Control
	ACC	:	Automatic Color Control
	AE	:	Audio Erase
	AFC	:	Automatic Frequency Control
	AFT	:	Automatic Fine Tuning
	AFT DET	:	Automatic Fine Tuning Detect
	AGC	:	Automatic Gain Control
	AMP	:	Amplifier
	ANT	:	Antenna
	A.PB	:	Audio Playback
	APC	:	Automatic Phase Control
	ASS'Y	:	Assembly
	AT	:	All Time
	AUTO	:	Automatic
	A/V	:	Audio/Video
B	**BGP**	:	Burst Gate Pulse
	BOT	:	Beginning of Tape
	BPF	:	Bandpass Filter
	BRAKE SOL	:	Brake Solenoid
	BUFF	:	Buffer
	B/W	:	Black and White
C	**C**	:	Capacitance, Collector
	CASE	:	Cassette
	CAP	:	Capstan
	CARR	:	Carrier
	CH	:	Channel
	CLK	:	Clock
	CLOCK (SY-SE)	:	Clock (Syscon to Servo)
	COMB	:	Combination, Comb Filter
	CONV	:	Converter
	CPM	:	Capstan Motor
	CTL	:	Control
	CYL	:	Cylinder
	CYL-M	:	Cylinder-Motor
	CYL SENS	:	Cylinder-Sensor
D	**DATA (SY-CE)**	:	Data (Syscon to Servo)
	dB	:	Decibel
	DC	:	Direct Current
	DD Unit	:	Direct Drive Motor Unit
	DEMOD	:	Demodulator
	DET	:	Detector
	DEV	:	Deviation
E	**E**	:	Emitter
	EF	:	Emitter Follower
	EMPH	:	Emphasis
	ENC	:	Encoder
	ENV	:	Envelope
	EOT	:	End of Tape
	EQ	:	Equalizer
	EXT	:	External
F	**F**	:	Fuse
	FBC	:	Feed Back Clamp
	FE	:	Full Erase
	FF	:	Fast Forward, Flip-flop
	FG	:	Frequency Generator
	FL SW	:	Front Loading Switch
	FM	:	Frequency Modulation
	FSC	:	Frequency Sub Carrier
	FWD	:	Forward
G	**GEN**	:	Generator
	GND	:	Ground
H	**H.P.F**	:	High Pass Filter
	H.SW	:	Head Switch
	Hz	:	Hertz
I	**IC**	:	Integrated Circuit
	IF	:	Intermediate Frequency
	IND	:	Indicator
	INV	:	Inverter
K	**KIL**	:	Killer
L	**L**	:	Left
	LED	:	Light Emitting Diode
	LIMIT AMP	:	Limiter Amplifier
	LM, LDM	:	Loading Motor
	LP	:	Long Play
	L.P.F	:	Low Pass Filter
	LUMI.	:	Luminance
M	**M**	:	Motor
	MAX	:	Maximum
	MINI	:	Minimum
	MIX	:	Mixer, mixing
	MM	:	Monostable Multivibrator
	MOD	:	Modulator, Modulation
	MPX	:	Multiplexer, Multiplex
	MS SW	:	Mecha State Switch
N	**NC**	:	Non Connection
	NR	:	Noise Reduction
O	**OSC**	:	Oscillator
	OPE	:	Operation
P	**PB**	:	Playback
	PB CTL	:	Playback Control
	PB-C	:	Playback-Chrominance
	PB-Y	:	Playback-Luminance
	PCB	:	Printed Circuit Board
	P. CON	:	Power Control
	PD	:	Phase Detector
	PG	:	Pulse Generator
	P-P	:	Peak-to Peak
R	**R**	:	Right
	REC	:	Recording
	REC-C	:	Recording-Chrominance
	REC-Y	:	Recording-Luminance
	REEL BRK	:	Reel Brake
	REEL S	:	Reel Sensor
	REF	:	Reference
	REG	:	Regulated, Regulator
	REW	:	Rewind
	REV, RVS	:	Reverse
	RF	:	Radio Frequency
	RMC	:	Remote Control
	RY	:	Relay
S	**S. CLK**	:	Serial Clock
	S. COM	:	Sensor Common
	S. DATA	:	Serial Data
	SEG	:	Segment
	SEL	:	Select, Selector
	SENS	:	Sensor
	SER	:	Search Mode
	SI	:	Serial Input
	SIF	:	Sound Intermediate Frequency
	SO	:	Serial Output
	SOL	:	Solenoid
	SP	:	Standard Play

KEY TO ABBREVIATIONS

S	**STB**	:	Serial Strobe
	SW	:	Switch
	SYNC	:	Synchronization
	SYNC SEP	:	Sync Separator, Separation
T	**TR**	:	Transistor
	TRAC	:	Tracking
	TRICK PB	:	Trick Playback
	TP	:	Test Point
U	**UNREG**	:	Unregulated
V	**V**	:	Volt
	VCO	:	Voltage Controlled Oscillator
	VIF	:	Video Intermediate Frequency
	VP	:	Vertical Pulse, Voltage Display
	V.PB	:	Video Playback
	VR	:	Variable Resistor
	V.REC	:	Video Recording
	VSF	:	Visual Search Fast Forward
	VSR	:	Visual Search Rewind
	VSS	:	Voltage Super Source
	V-SYNC	:	Vertical-Synchronization
	VT	:	Voltage Tuning
X	**X'TAL**	:	Crystal
Y	**Y/C**	:	Luminance/Chrominance

SERVICE MODE LIST

This unit provided with the following SERVICE MODES so you can repair, examine and adjust easily.
To enter to the SERVICE MODE function, press and hold both buttons simultaneously on the main unit or on the main unit and on the remote control for more than a standard time (second).

Set Key	Set Key	Standard Time (seconds)	Operations
CH UP	FF	2	PLAY/REC total hours are displayed on the screen. Refer to the “PREVENTIVE CHECKS AND SERVICE INTERVALS” (CONFIRMATION OF HOURS USED). Can be checked of the INITIAL DATA of MEMORY IC. Refer to the “WHEN REPLACING EEPROM (MEMORY) IC”.
CH UP	STOP	2	Adjust the PG SHIFTER automatically. Refer to the “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
CH UP	PLAY	2	Initialization of the factory on VCR. NOTE: Do not use this for the normal servicing. If you set a factory initialization, the memories are reset such as the clock setting, the channel setting, and PLAY/REC total hours.
CH DOWN	POWER	2	VCR operation mode at no connection of DVD. Refer to the “PREPARATION FOR SERVICING” NOTE: Although the DVD is connected, the DVD mode cannot be selected.

Set Key	Remocon Key	Standard Time (seconds)	Operations
REC	4	2	Initialization of the factory on DVD. NOTE: Do not use this for the normal servicing. The function will only work without the setting of DVD disc at DVD mode. While pressing the Remocon Key for more than the Standard Time, press the Set Key simultaneously.
REC	6	2	DVD Write mode. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.
STOP	1	3	Check for the firmware version. Refer to the “RE-WRITE FOR DVD FIRMWARE”. NOTE: Do not use this for the normal servicing. The function will only work at the DVD stop mode.
STOP	7	3	Releasing of PARENTAL LOCK. Refer to the “PARENTAL CONTROL - RATING LEVEL”. NOTE: The function will only work without the setting of DVD disc at DVD mode.
STOP	CM SKIP	3	Tray cannot be opened. Refer to the “TRAY LOCK”. NOTE: No indications on the screen when the Tray Lock is setting.

Method	Operations
Press the ATR button on the remote control for more than 2 seconds during PLAY.	Adjusting of the Tracking to the center position. Refer to the “MECHANICAL ADJUSTMENT” (GUIDE ROLLER) and “ELECTRICAL ADJUSTMENT” (PG SHIFTER).
Make the short circuit between the test point of SERVICE and the GND.	The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape. Refer to the “PREPARATION FOR SERVICING”

PREVENTIVE CHECKS AND SERVICE INTERVALS

The following standard table depends on environmental conditions and usage.
Parts replacing time does not mean the life span for individual parts.
Also, long term storage or misuse may cause transformation and aging of rubber parts.
The following list means standard hours, so the checking hours depends on the conditions.

Time / Parts Name	500 hours	1,000 hours	1,500 hours	2,000 hours	2,500 hours	Notes
Audio Control Head	■	■	■	●	●	Clean those parts in contact with the tape.
Full Erase Head (Recorder only)	■	■	■	●	●	
Capstan Belt		●	●	●	●	Clean the rubber, and parts which the rubber touches.
Pinch Roller	■	●	●	●	●	
Capstan DD Unit		●	●	●	●	
Loading Motor					●	
Tension Band		●	●	●	●	
T Brake Band		●	●	●	●	
Clutch Ass'y		●	●	●	●	
Idler Arm Ass'y		●	●	●	●	
Capstan Shaft	■	■	■	■	■	
Tape Running Guide Post	■	■	■	■	■	Replace when rolling becomes abnormal.
Cylinder Unit	■	●	●	●	●	Clean the Head

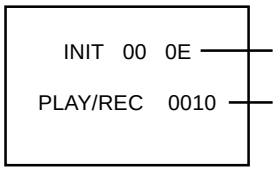
■ : Clean
● : Check it and if necessary, replace it.

CONFIRMATION OF HOURS USED

PLAY/REC total hours can be checked on the screen.
Total hours are displayed in 16 system of notation.

NOTE: If you set a factory initialization, the total hours is reset to "0".

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   The **Fig. 1** screen will appear on TV Monitor.
4. After the confirmation of using hours, turn off the power.



Initial setting content of MEMORY IC.

PLAY/REC total hours.
= (16 x 16 x 16 x thousands digit value)
+ (16 x 16 x hundreds digit value)
+ (16 x tens digit value)
+ (ones digit value)

Fig. 1

PREVENTIVE CHECKS AND SERVICE INTERVALS

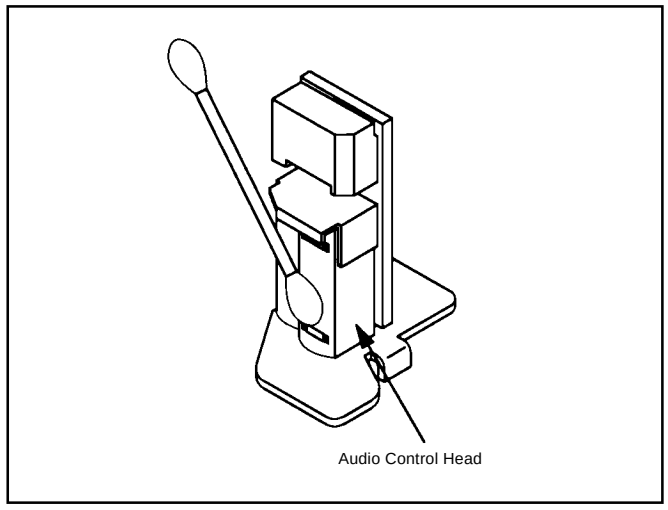
CLEANING

NOTE

After cleaning the heads with isopropyl alcohol, do not run a tape until the heads dry completely. If the heads are not completely dry and alcohol gets on the tape, damage may occur.

1. AUDIO CONTROL HEAD

Clean the Audio Control Head with the cotton stick soaked by alcohol. Clean the full erase head in the same manner. **(Refer to the figure below.)**



2. TAPE RUNNING SYSTEM

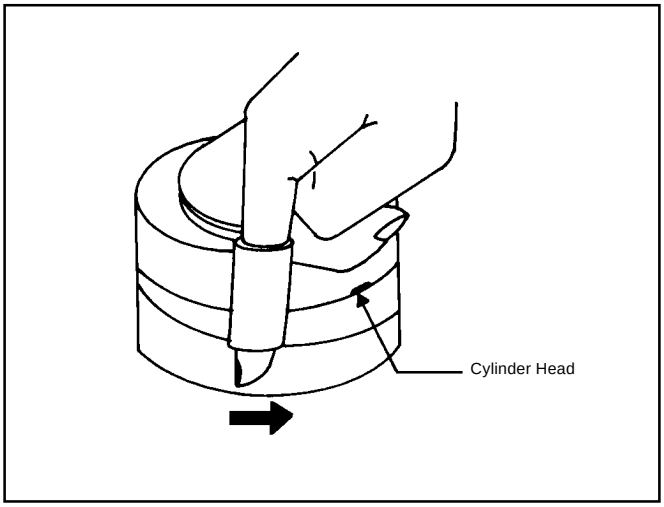
When cleaning the tape transport system, use the gauze moistened with isopropyl alcohol.

3. CYLINDER

Wrap a piece of chamois around your finger. Dip it in isopropyl alcohol. Hold it to the cylinder head softly. Turn the cylinder head counterclockwise to clean it (in the direction of the arrow). **(Refer to the figure below.)**

NOTE

Do not exert force against the cylinder head. Do not move the chamois upward or downward on the head.
Use the chamois one by one.



RE-WRITE FOR DVD FIRMWARE

1. Turn on the power, and set the DVD mode.

2. Confirm that the “No Disc” will be appeared on the screen.

3. Open the DVD tray.

4. Press both Channel button **(6)** on the remote control and the REC button on the set for more than 2 seconds.

5. Press OPEN/CLOSE button on the unit to check if all the keys on the unit do not function.
   NOTE: To check if DVD Write mode is set.
   When inserting Up-Date Disc at Non DVD Write mode, the read error will happen.

6. Place the Up-Date Disc and close the tray by hand. **(Refer to SERVICING FIXTURE AND TOOLS)**

7. Automatic read will start and "CD-R UPDATE PROCESS" will be displayed on the screen.
   At this time, the horizontal noise lines may appear. But no problem.

8. Approxi. 20 seconds later, the tray will open automatically. Remove the Up-Date Disc.

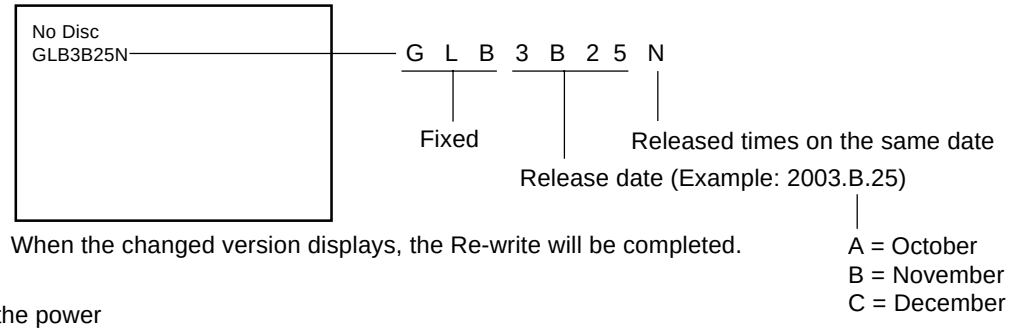
9. Then, Approxi. 40 seconds later, the above indication will disappear and the tray will close automatically.
   When the "No Disc" appears on the screen, the write will end.
   NOTE: Do not turn off the unit on the way or push the tray by hand to close it.
   Up-Date error will happen and can not be done with the Up-Date of Up-Date Disc.

10. Unplug the AC cord, then plug it in.

11. **After the write, set to the initializing of shipping.**
    Set to the DVD mode, press both Channel button **(4)** on the remote control and the REC button on the set for more than 2 seconds.

12. The "INITIALIZE 5 ---> COMPLETE" will appear on the screen.
    Then unplug the AC cord, and plug it in.

13. **CHECK FOR THE FIRMWARE VERSION**
    Set to the DVD mode, press both Channel button **(1)** on the remote control and the STOP button on the set for more than 3 seconds.
    Firmware version will be displayed on the top left of the screen.



When the changed version displays, the Re-write will be completed.

14. Turn off the power

WHEN REPLACING EEPROM (MEMORY) IC

If a service repair is undertaken where it has been required to change the MEMORY IC, the following steps should be taken to ensure correct data settings while making reference to TABLE 1.

NOTE: INI 34 and INI 35 cannot be set. Because, the total time for the PLAY/REC of the main unit is recorded.

INIT	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9	+A	+B	+C	+D	+E	+F
00	0E	52	DE	60	64	64	4A	86	0B	2B	86	32	8A	08	0A	0F
10	AF	97	95	8A	B0	55	31	04	88	A5	9F	3A	00	10	BF	00
20	3A	11	22	70	61	2A	3A	00	0B	00	00	E5	A2	B0	00	---

Table 1

1. Connect the set to TV Monitor.
2. Turn on the POWER.
3. Press both CH UP button on the set and the FF button on the set for more than 2 seconds.
   ADDRESS and DATA will appear on TV Monitor as **Fig 1**.

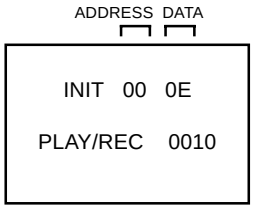


Fig. 1

4. ADDRESS is now selected and should “blink”. Using the SET + or - button on the remote, step through the ADDRESS until required ADDRESS to be changed is reached.
5. Press ENTER to select DATA. When DATA is selected, it will “blink”.
6. Again, step through the DATA using SET + or - button until required DATA value has been selected.
7. Pressing ENTER will take you back to ADDRESS for further selection if necessary.
8. Repeat steps 4 to 7 until all data has been checked.
9. When satisfied correct DATA has been entered, turn POWER off (return to STANDBY MODE) to finish DATA input.

After the data input, set to the initializing of shipping.

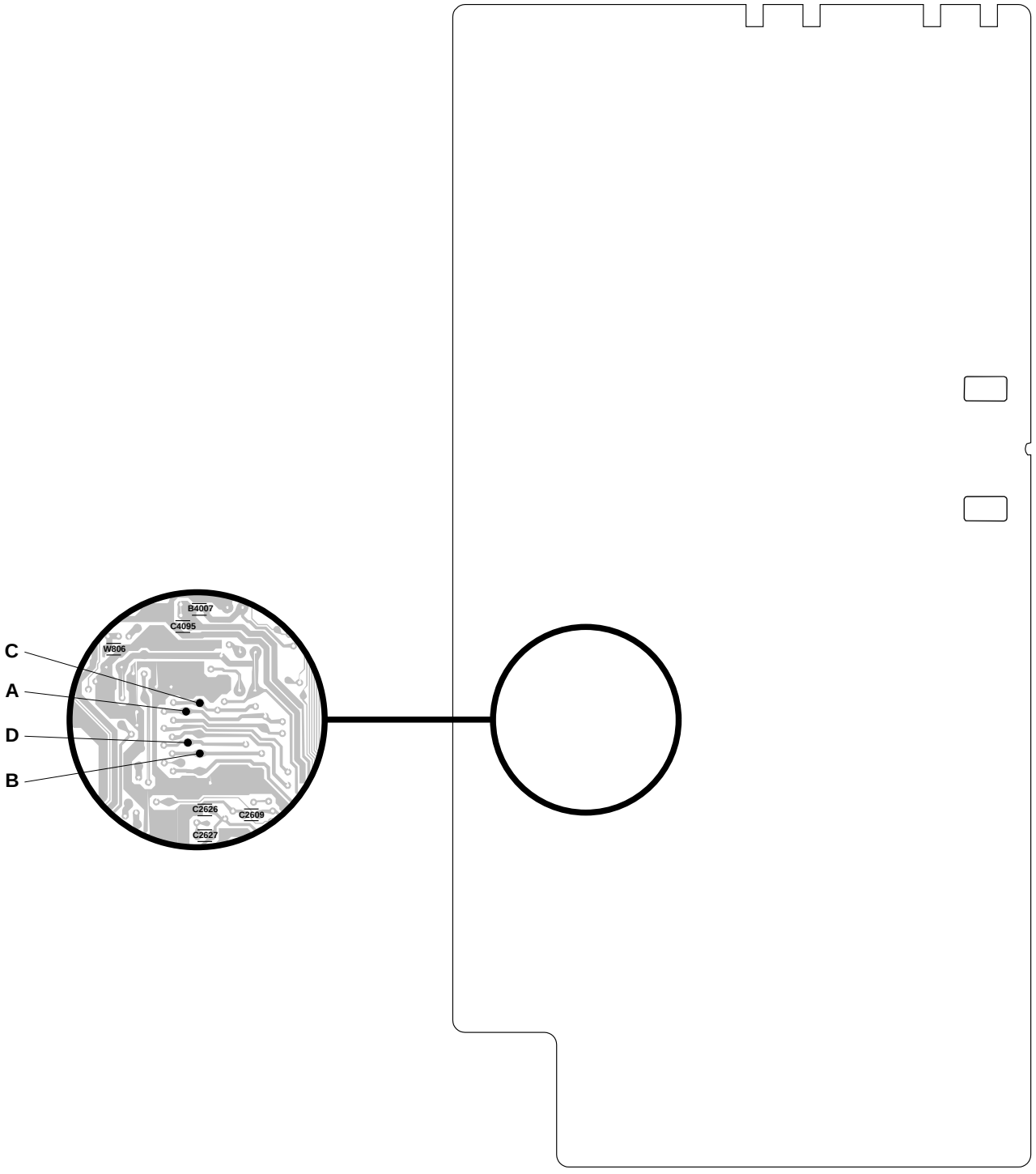
10. Turn POWER on.
11. Press both CH UP button on the set and the PLAY button on the set for more than 2 seconds.
12. After the finishing of the initializing of shipping, the unit will turn off automatically.

The unit will now have the correct DATA for the new MEMORY IC.

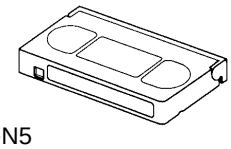
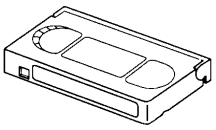
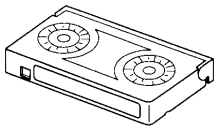
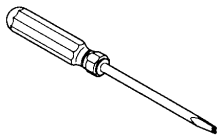
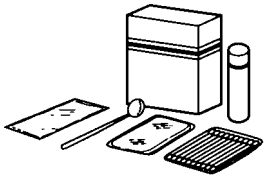
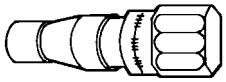
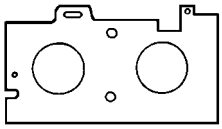
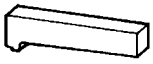
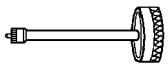
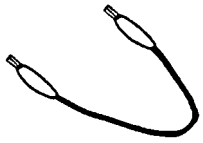
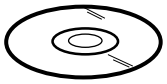
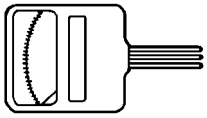
RF SIGNAL CHECK OF DVD PCB

RF signal check can be done at the following A~D resistance points on the DVD PCB.

DVD PCB (BOTTOM SIDE)



SERVICING FIXTURES AND TOOLS

Alignment Tape  ST-N5 ST-NF	Back tension cassette gauge  70909103	Torque cassette gauge (KT-300NR)  70909199	Taper nut driver  70909228
VTR cleaning kit 	VTR lubrication kit 	Grease 	JG002B Adapter JG002E Dial Torque Gauge (10~90gf•cm) JG002F (60~600gf•cm) 
JG022 Master Plane 	JG024A Reel Disk Height Adjustment Jig 	JG153 X Value Adjustment Screwdriver 	JG154 Cable 
JG176 Up-Date Disc 	JG185 Tentelometer 		

Ref. No.	Part No.	Parts Name	Remarks
JG002B	APJG002B00	Adapter	VSR Torque, Brake Torque (S Reel/T Reel Ass'y)
JG002E	APJG002E00	Dial Torque Gauge (10~90gf•cm)	Brake Torque (T Reel Ass'y)
JG002F	APJG002F00	Dial Torque Gauge (60~600gf•cm)	VSR Torque, Brake Torque (S Reel)
JG022	APJG022000	Master Plane	Reel Disk Height Adjustment
JG024A	APJG024A00	Reel Disk Height Adjustment Jig	Reel Disk Height Adjustment
JG153	APJG153000	X Value Adjustment Screwdriver	X Value Adjustment
JG154	APJG154000	Cable	Used to connect the test point of SERVICE and GROUND
JG176	APJG176043	Up-Date Disc	Up-Date of the Firmware
JG185	APJG185000	Tentelometer	Confirmation of Tape Tension on Playback

PREPARATION FOR SERVICING

How to use the Servicing Fixture

1. While pressing the POWER button on the set for more than 2 seconds, press the CH DOWN button on the set simultaneously at the Power OFF. Although the DVD is connected, the DVD mode cannot be selected.
2. Short circuit between **TP3001** and **Ground** with the cable JG154.
   (The BOT, EOT, and the Reel Sensor do not work and the VCR deck can be operated without a cassette tape.)
3. In case of using a cassette tape, press the STOP/EJECT button to insert or eject a cassette tape.
   Turn on the power and re-check the cable before checking the trouble points.

When you servicing with connection of DVD, perform the operations above step 2 to step 3.

MECHANICAL ADJUSTMENTS

1. CONFIRMATION AND ADJUSTMENT

Read the following NOTES before starting work.

- Place an object which weighs between 450g~500g on the Cassette Tape to keep it steady when you want to make the tape run without the Cassette Holder. (Do not place an object which weighs over 500g.)

1-1: CONFIRMATION AND ADJUSTMENT OF REEL DISK HEIGHT

1. Turn on the power and set to the STOP mode.
2. Set the master plane **(JG022)** and reel disk height adjustment jig **(JG024A)** on the mechanism framework, taking care not to scratch the drum, as shown in **Fig. 1-1-A**.
3. While turning the reel and confirm the following points. Check if the surface "A" of reel disk is lower than the surface "B" of reel disk height adjustment jig **(JG024A)** and is higher than the surface "C". If it is not passed, place the height adjustment washers and adjust to 10(+2, -0)mm.
4. Adjust the other reel in the same way.

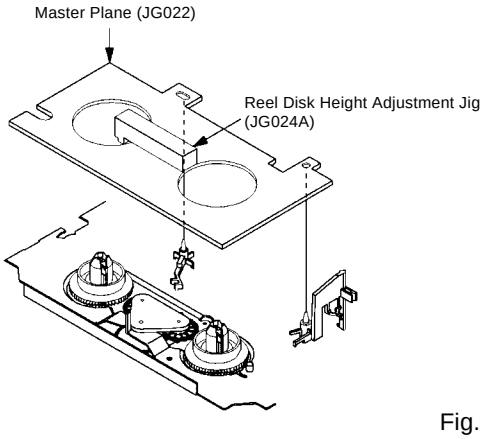


Fig. 1-1-A

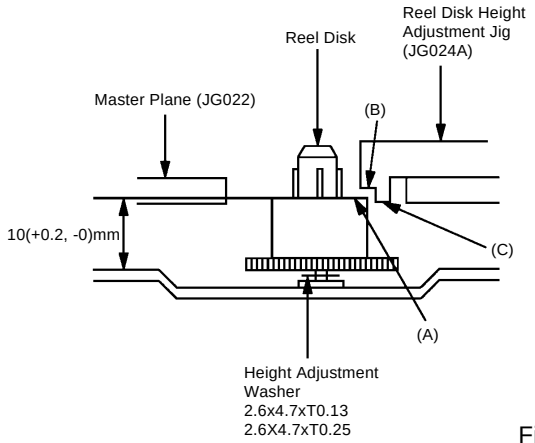


Fig. 1-1-B

1-2: CONFIRMATION AND ADJUSTMENT OF TENSION POST POSITION

1. Set to the PLAY mode.
2. Adjust the adjusting section for the Tension Arm position so that the Tension Arm top is within the standard line of Main Chassis.
3. While turning the S Reel clockwise, confirm that the edge of the Tension Arm is located in the position described above.

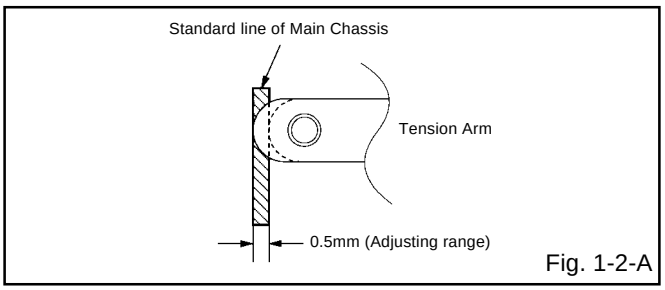


Fig. 1-2-A

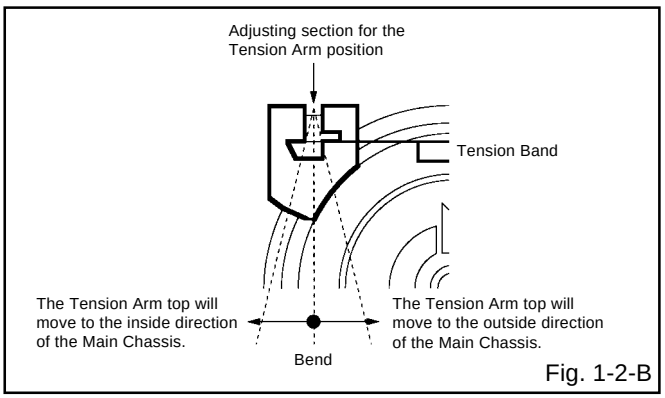


Fig. 1-2-B

1-3: CONFIRMATION OF PLAYBACK TORQUE AND BACK TENSION TORQUE DURING PLAYBACK

1. Load a video tape (T-120) recorded in standard speed mode. Set the unit to the PLAY mode.
2. Install the tentelometer (JG185) as shown in **Fig. 1-3**. Confirm that the meter indicates 20 ± 2gf in the beginning of playback.

• USING A CASSETTE TYPE TORQUE TAPE **(KT-300NR)**

1. After confirmation and adjustment of Tension Post position **(Refer to item 1-2)**, load the cassette type torque tape **(KT-300NR)** and set to the PLAY mode.
2. Confirm that the right meter of the torque tape indicates 50~90gf•cm during playback in SP mode.
3. Confirm that the left meter of the torque tape indicates 25~40gf•cm during playback in SP mode.

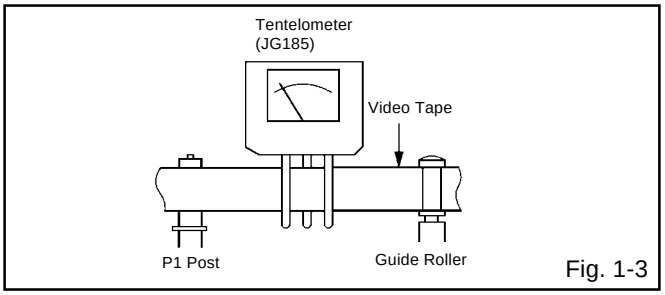


Fig. 1-3

MECHANICAL ADJUSTMENTS

1-4: CONFIRMATION OF VSR TORQUE

1. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Set to the Picture Search (Rewind) mode. **(Refer to Fig.1-4-B)**
2. Then, confirm that it indicates 120~180gf•cm.

NOTE

Install the Torque Gauge on the reel disk firmly. Press the REW button to turn the reel disk.

1-5: CONFIRMATION OF REEL BRAKE TORQUE

(S Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the S Reel.
3. Install the Torque Gauge **(JG002F)** and Adapter **(JG002B)** on the S Reel. Turn the Torque Gauge **(JG002F)** clockwise.
4. Then, confirm that it indicates 60~100gf•cm.

(T Reel Brake) **(Refer to Fig. 1-4-B)**

1. Once set to the Fast Forward mode then set to the Stop mode. While, unplug the AC cord when the Pinch Roller Block is on the position of **Fig. 1-4-A**.
2. Move the Idler Ass'y from the T Reel.
3. Install the Torque Gauge **(JG002E)** and Adapter **(JG002B)** on the T reel. Turn the Torque Gauge **(JG002E)** counterclockwise.
4. Then, confirm that it indicates 30~50gf•cm.

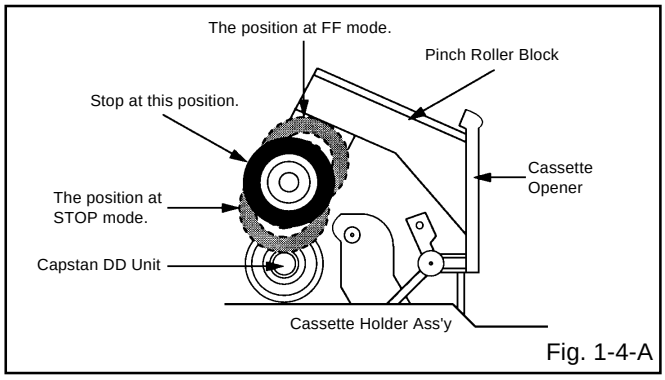


Fig. 1-4-A

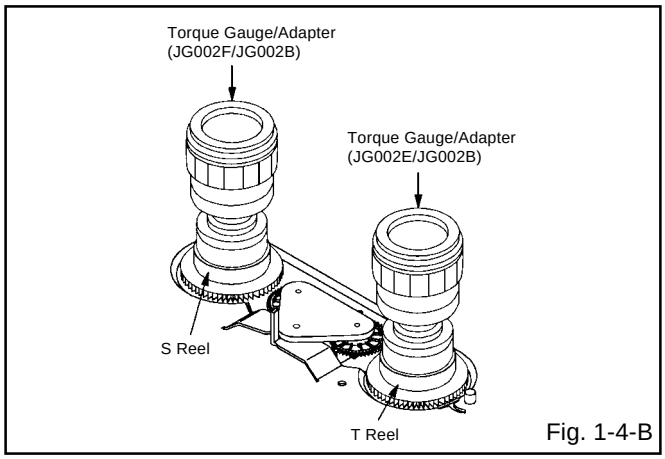


Fig. 1-4-B

NOTE

If the torque is out of the range, replace the following parts.

Check item	Replacement Part
1-4	Idler Ass'y/Clutch Ass'y
1-5	S Reel side: S Reel/Tension Band/Tension Connect/Tension Arm Ass'y T Reel side: T Reel/T Brake Band//T Brake Spring/T Brake Arm

2. CONFIRMATION AND ADJUSTMENT OF TAPE RUNNING MECHANISM

Tape Running Mechanism is adjusted precisely at the factory. Adjustment is not necessary as usual. When you replace the parts of the tape running mechanism because of long term usage or failure, the confirmation and adjustment are necessary.

2-1: GUIDE ROLLER

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Connect CH-1 of the oscilloscope to **TP101 (Envelope)** and CH-2 to **TP3002 (SW Pulse)**.
3. Trigger with SW Pulse and observe the envelope. **(Refer to Fig. 2-1-A)**
4. When observing the envelope, adjust the Taper Nut Driver slightly until the envelope will be flat.
   Even if you press the Tracking Button, adjust so that flatness is not moved so much.
5. Adjust so that the A : B ratio is better than 3 : 2 as shown in **Fig. 2-1-B**, even if you press the Tracking Button to move the envelope (The envelope waveform will begin to decrease when you press the Tracking Button).
6. Adjust the PG shifter during playback.
   (Refer to the ELECTRICAL ADJUSTMENTS)

NOTE

After adjustment, confirm and adjust A/C head.
(Refer to item 2-2)

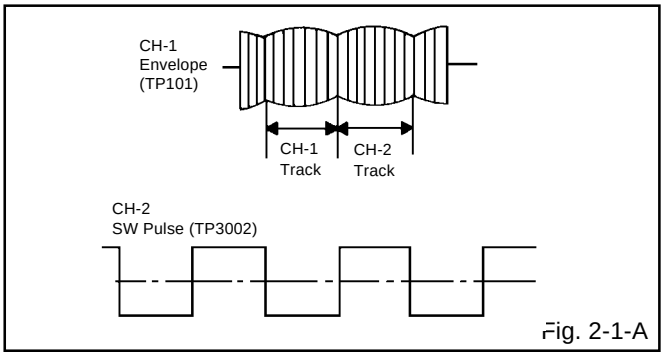


Fig. 2-1-A

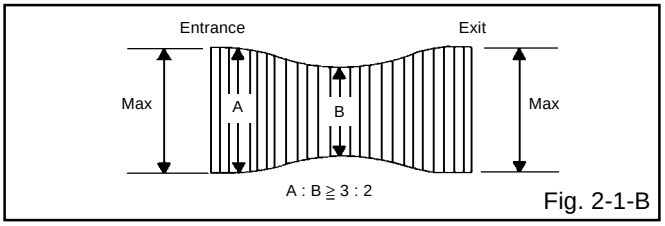


Fig. 2-1-B

MECHANICAL ADJUSTMENTS

2-2: CONFIRMATION AND ADJUSTMENT OF AUDIO/ CONTROL HEAD

When the Tape Running Mechanism does not work well, adjust the following items.

1. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
2. Confirm that the reflected picture of stamp mark is appeared on the tape prior to P4 Cap as shown in **Fig. 2-2-A**.
   a) When the reflected picture is distorted, turn the screw ① clockwise until the distortion is disappeared.
   b) When the reflected picture is not distorted, turn the screw ① counterclockwise until little distortion is appeared, then adjust the a).
3. Turn the screw ② to set the audio level to maximum.
4. Confirm that the bottom of the Audio/ Control Head and the bottom of the tape is shown in **Fig. 2-2-C**.
   c) When the height is not correct, turn the screw ③ to adjust the height. Then, adjust the 1~3 again.

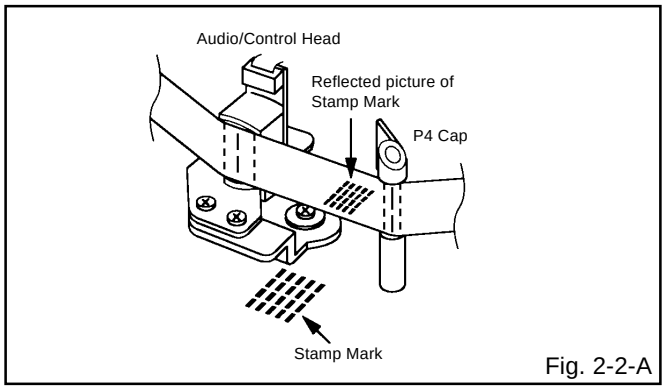


Fig. 2-2-A

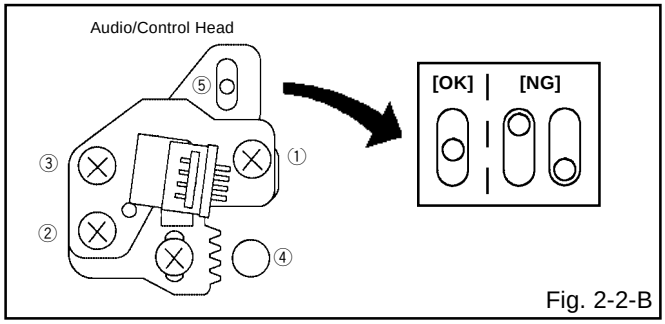


Fig. 2-2-B

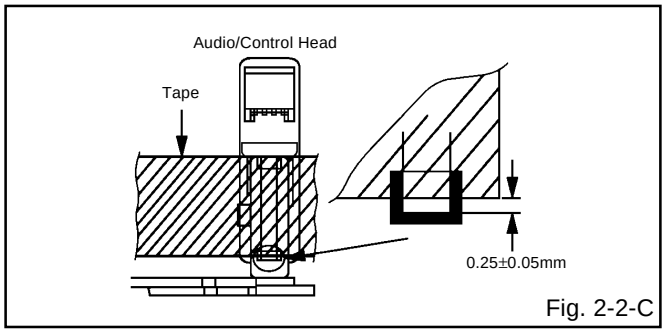


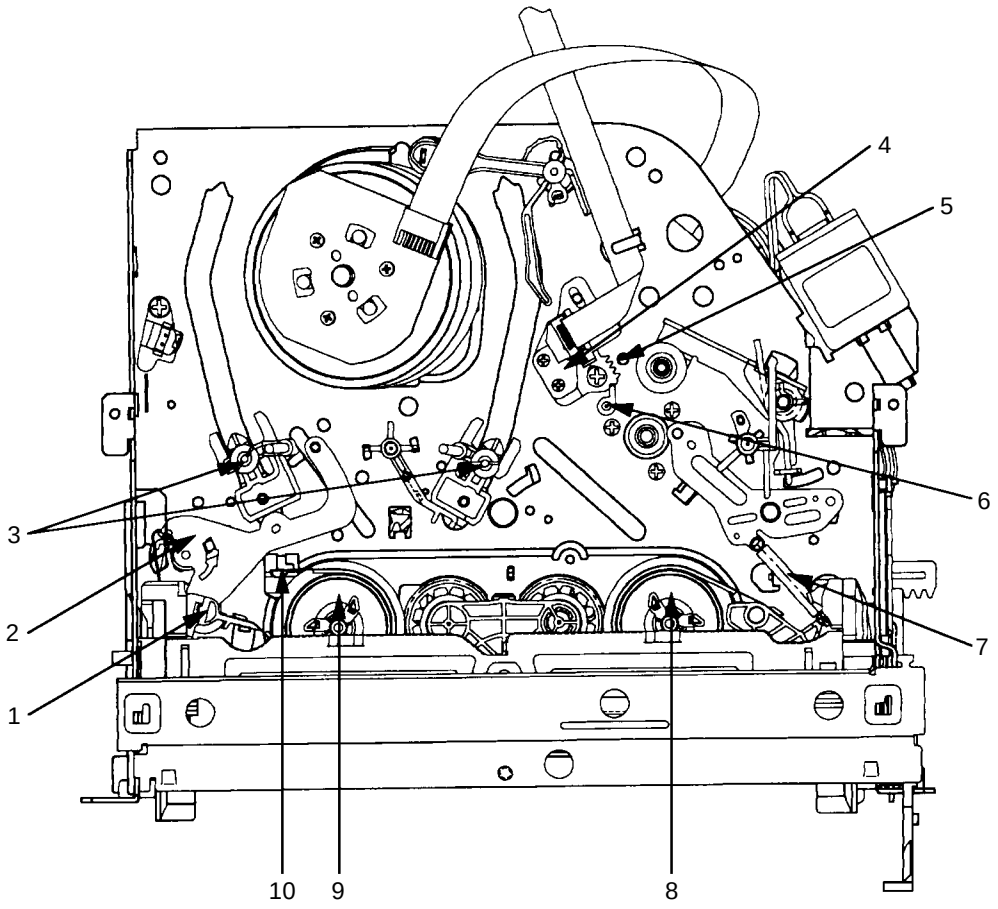
Fig. 2-2-C

2-3: TAPE RUNNING ADJUSTMENT (X VALUE ADJUSTMENT)

1. Confirm and adjust the height of the Reel Disk. **(Refer to item 1-1)**
2. Confirm and adjust the position of the Tension Post. **(Refer to item 1-2)**
3. Adjust the Guide Roller. **(Refer to item 2-1)**
4. Confirm and adjust the Audio/Control Head. **(Refer to item 2-2)**
5. Connect CH-1 of the oscilloscope to **TP3002** and CH-2 to **TP101**.
6. Playback the VHS Alignment Tape (Monoscope of ST-N5 MODE2).
7. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
8. Set the X Value adjustment driver **(JG153)** to the ④ of **Fig. 2-2-B**. Adjust X value so that the envelope waveform output becomes maximum. Then, check if the ⑤ section of **Fig. 2-2-B** is on the center position (or rather to the cylinder side). In case of the envelope maximum at the difference position from the center, adjust the matching of picture and sound again.

MECHANICAL ADJUSTMENTS

3. MECHANISM ADJUSTMENT PARTS LOCATION GUIDE



1. Tension Connect
2. Tension Arm
3. Guide Roller
4. Audio/Control Head
5. X value adjustment driver hole
6. P4 Post
7. T Brake Spring
8. T Reel
9. S Reel
10. Adjusting section for the Tension Arm position

ELECTRICAL ADJUSTMENTS

Read and perform this adjustment when repairing the circuits or replacing electrical parts or PCB assemblies.

1. BASIC ADJUSTMENT

CAUTION

When you exchange IC and Transistor for a heat sink, apply the silicon grease on the contact section of the heat sink. Before applying new silicon grease, remove all the old silicon grease. (Old grease may cause damages to the IC and Transistor.)

1-1: PG SHIFTER

CONDITIONS

MODE-PLAYBACK
Input Signal-Alignment Tape

INSTRUCTIONS

1. Connect CH-1 on the oscilloscope to **TP3002** and CH-2 to **TP8001**.
2. Playback the alignment tape.
3. Press and hold the ATR button on the remote control more than 2 seconds to set tracking to center.
4. Press both CH UP button on the set and the STOP button on the set for more than 2 seconds.

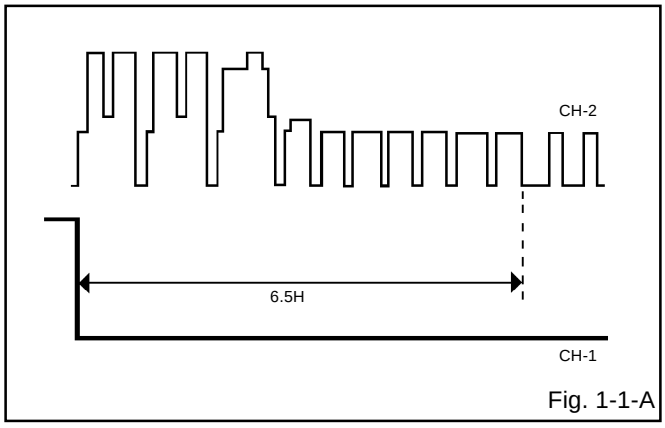


Fig. 1-1-A

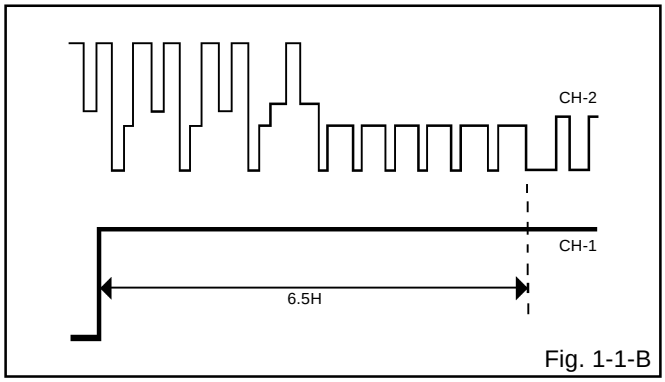
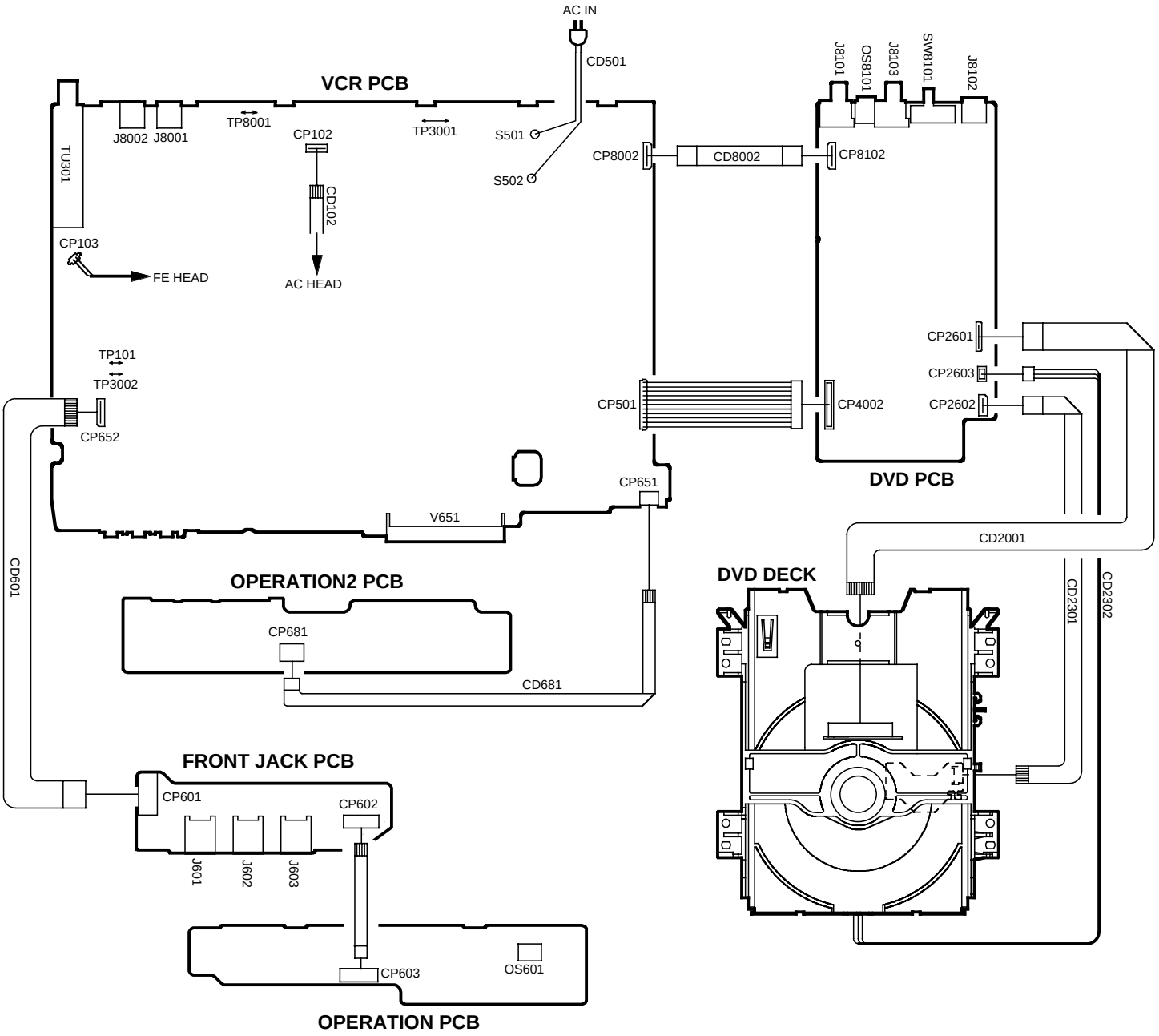


Fig. 1-1-B

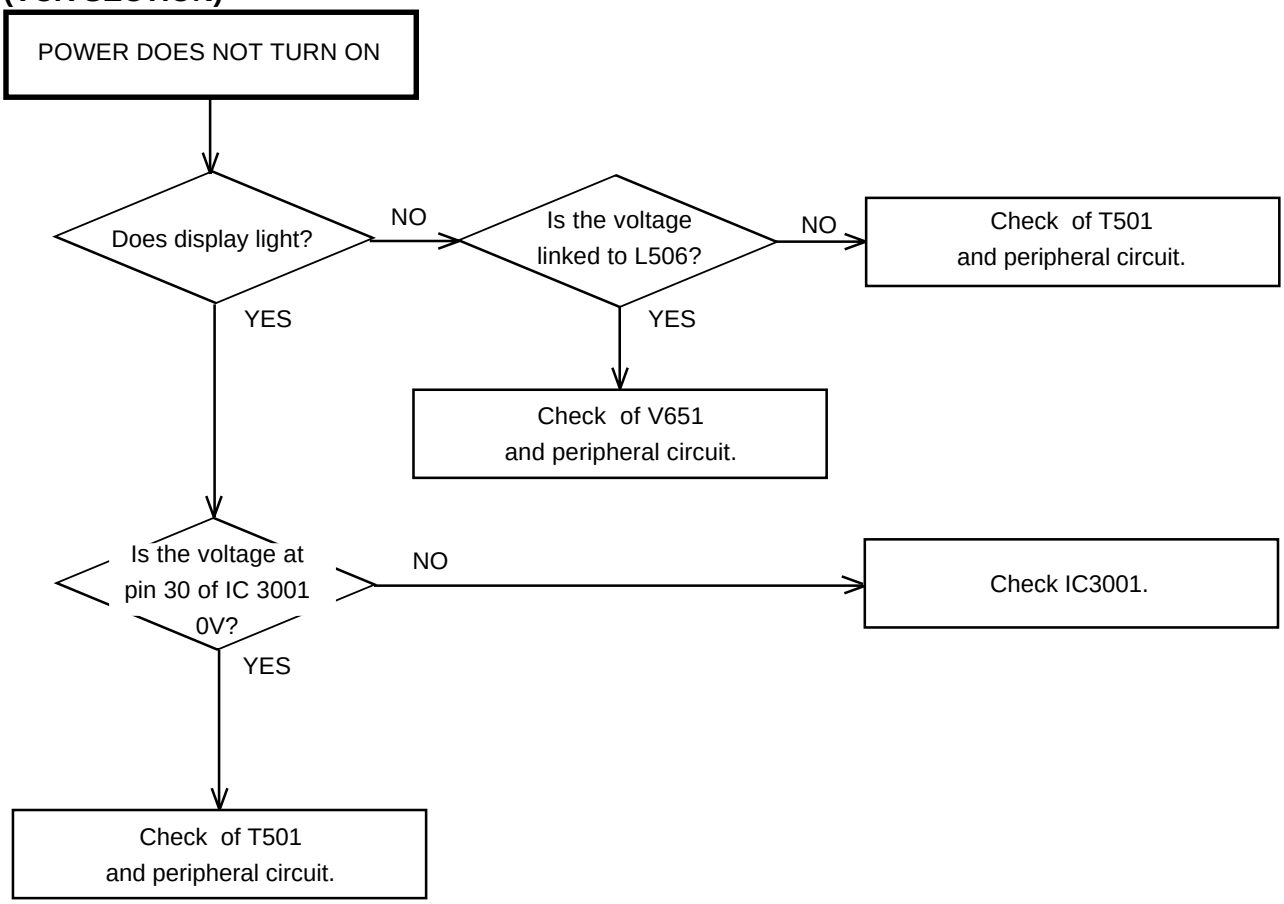
ELECTRICAL ADJUSTMENTS

2. ELECTRICAL ADJUSTMENT PARTS LOCATION GUIDE (WIRING CONNECTION)

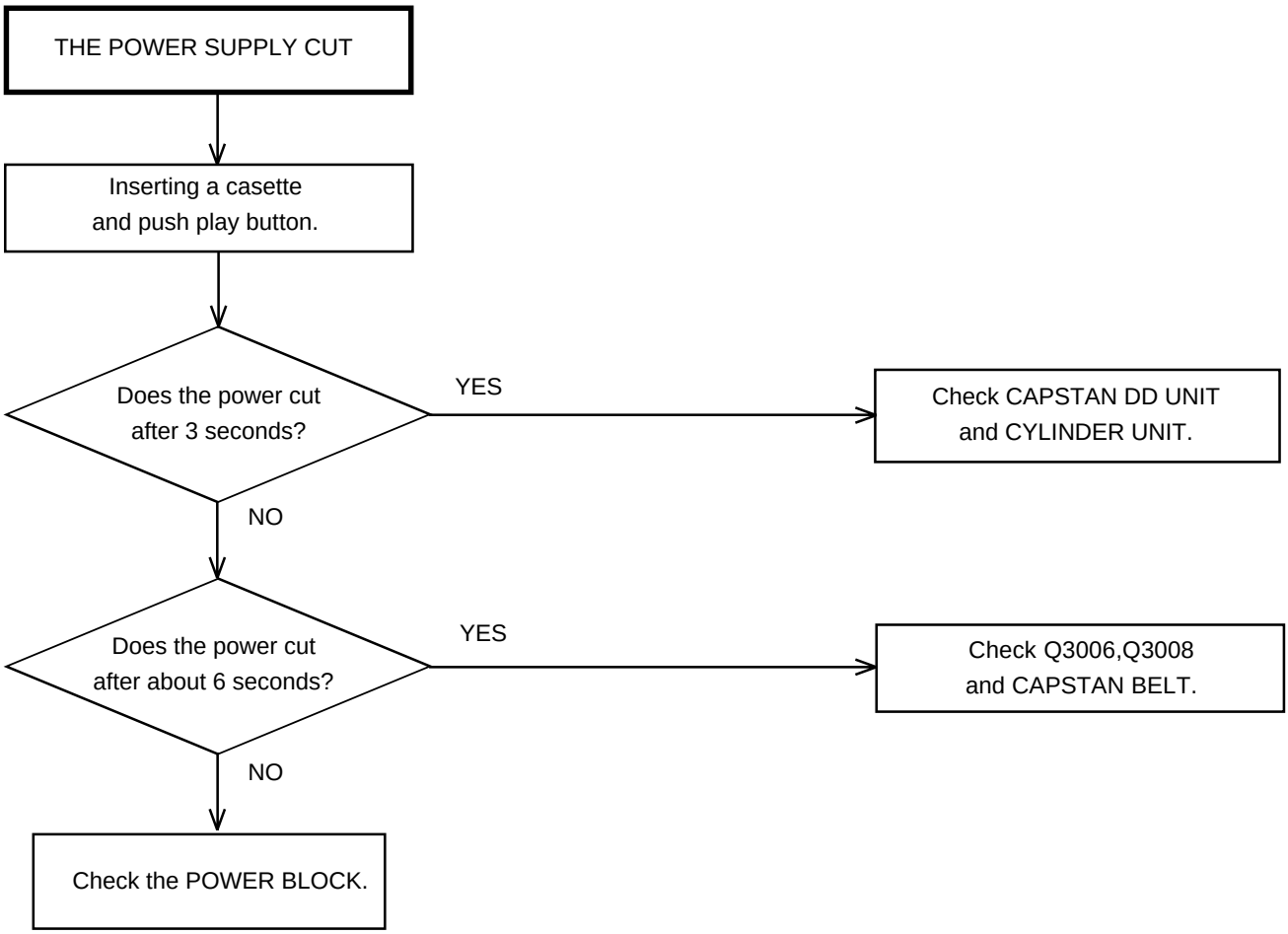


TROUBLESHOOTING GUIDE

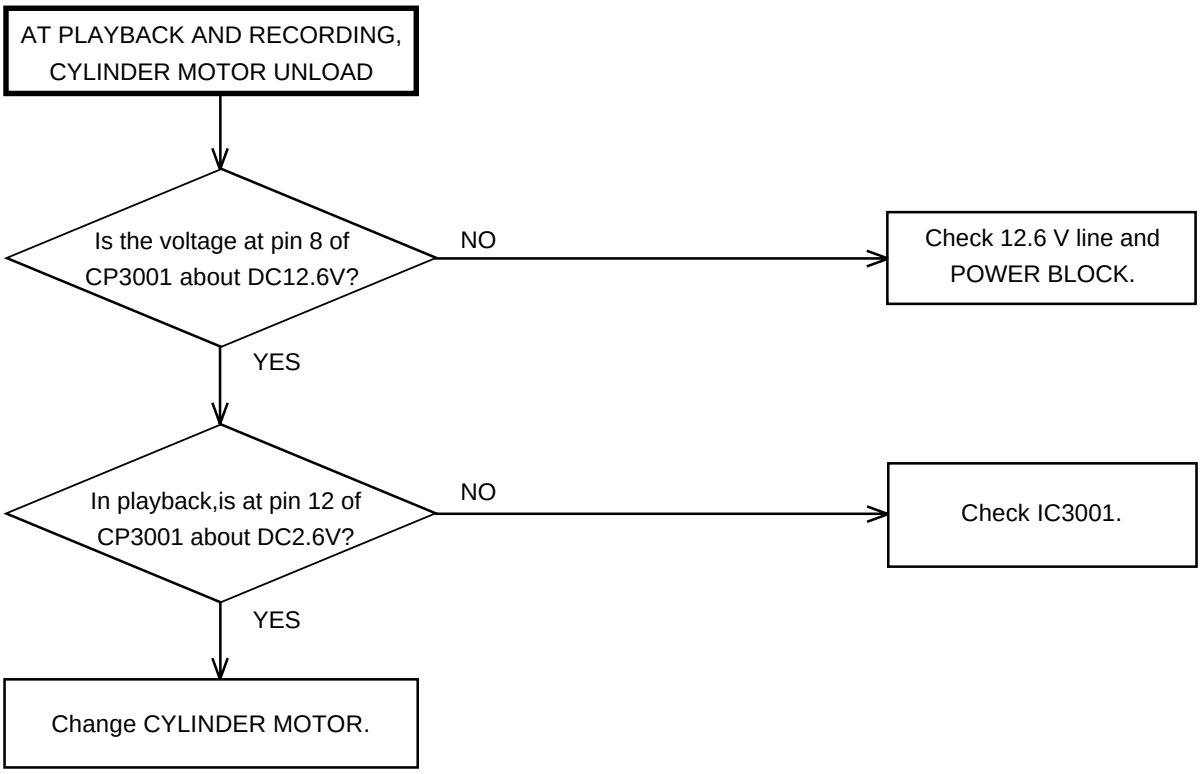
(VCR SECTION)



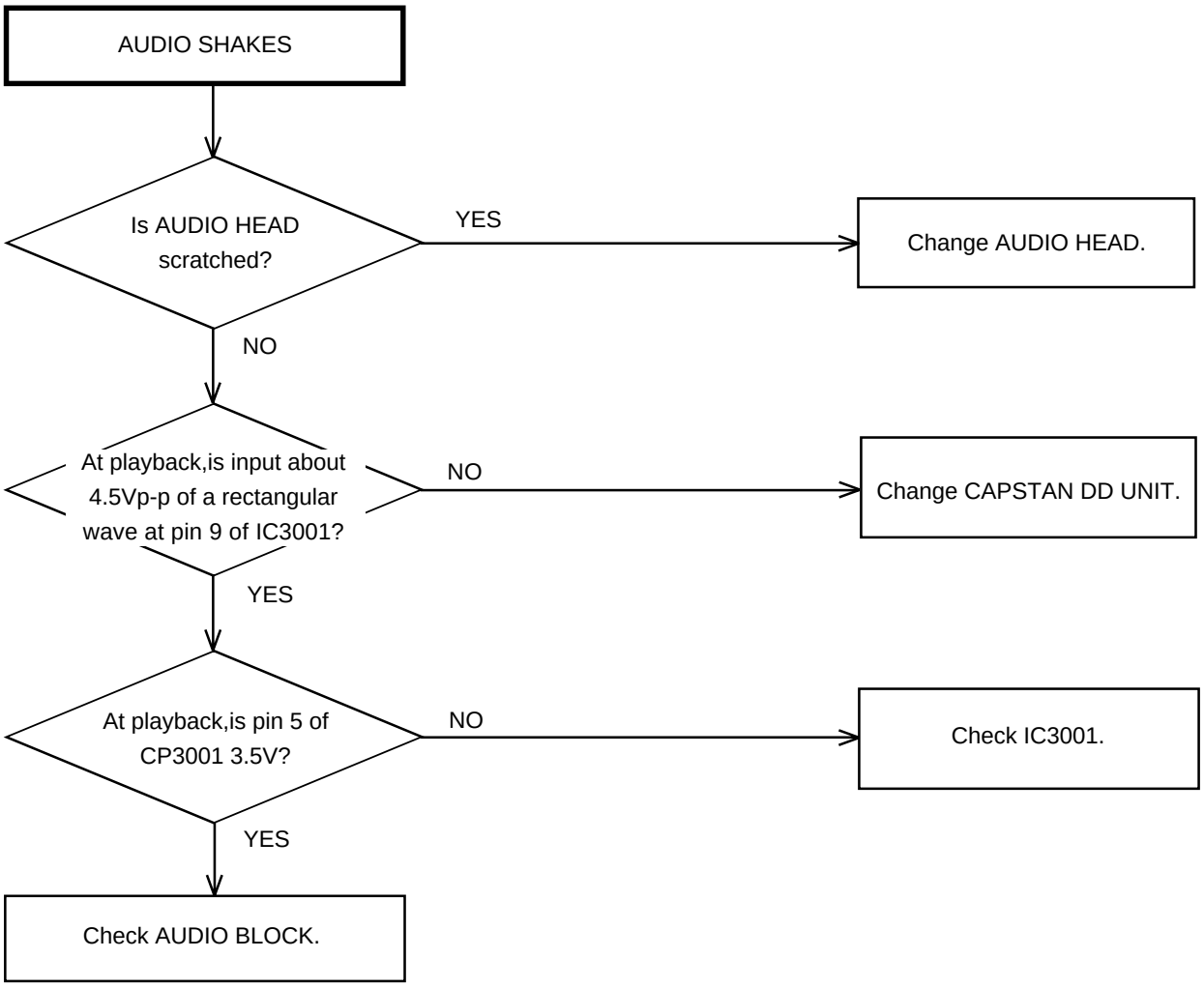
TROUBLESHOOTING GUIDE



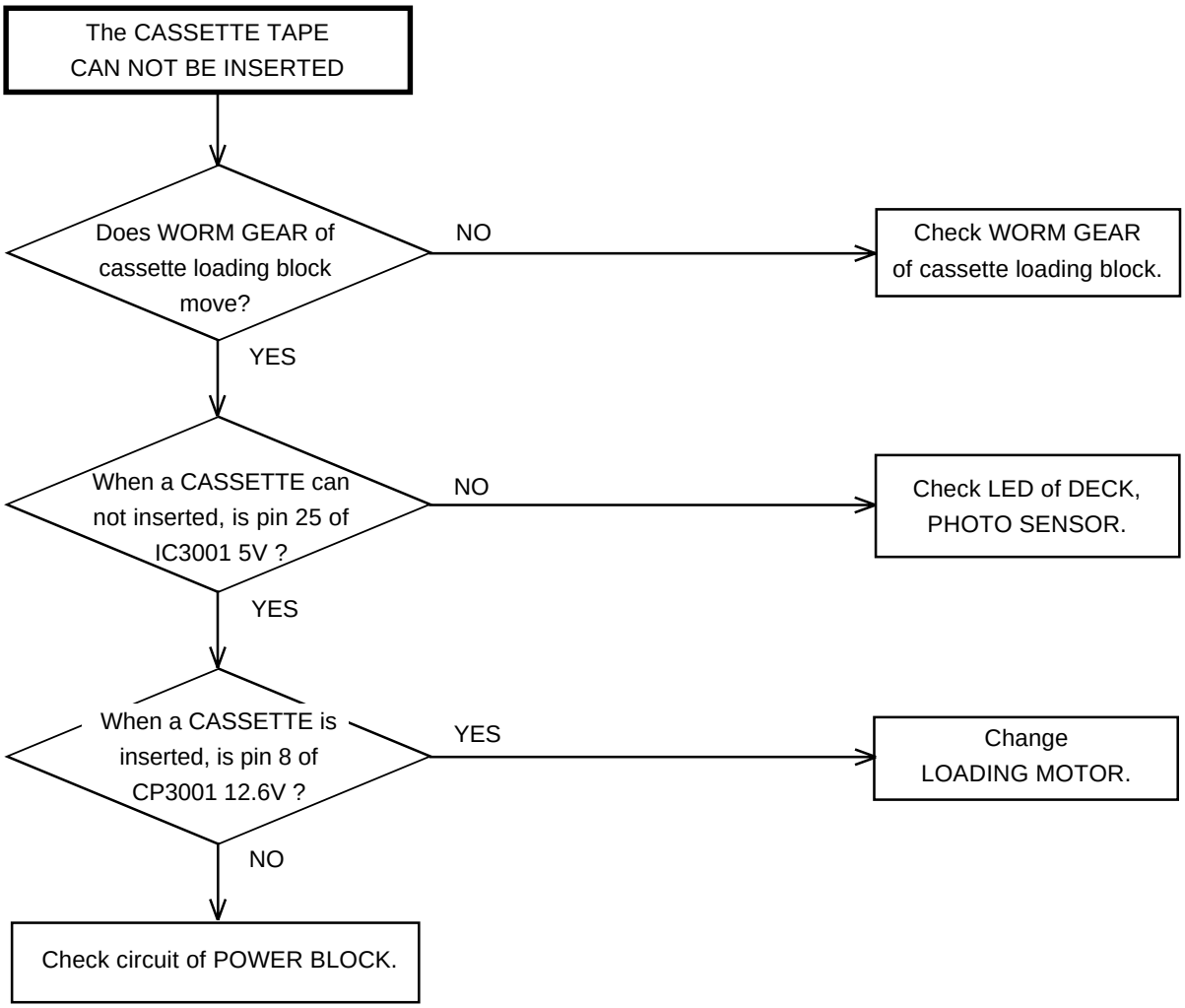
TROUBLESHOOTING GUIDE


AT PLAYBACK AND RECORDING, CYLINDER MOTOR UNLOAD
Is the voltage at pin 8 of CP3001 about DC12.6V?
NO
Check 12.6 V line and POWER BLOCK.
YES
In playback,is at pin 12 of CP3001 about DC2.6V?
NO
Check IC3001.
YES
Change CYLINDER MOTOR.

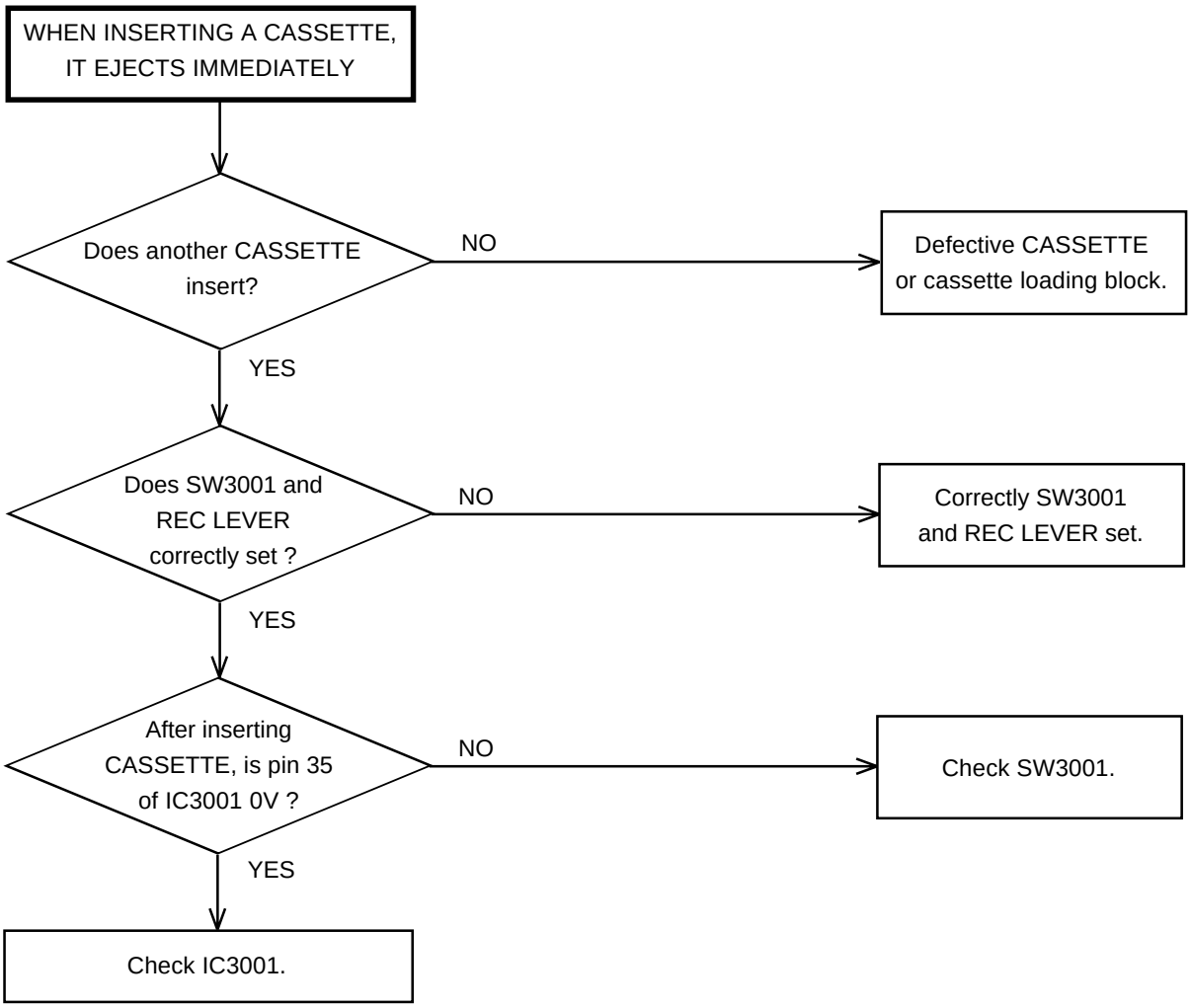
TROUBLESHOOTING GUIDE



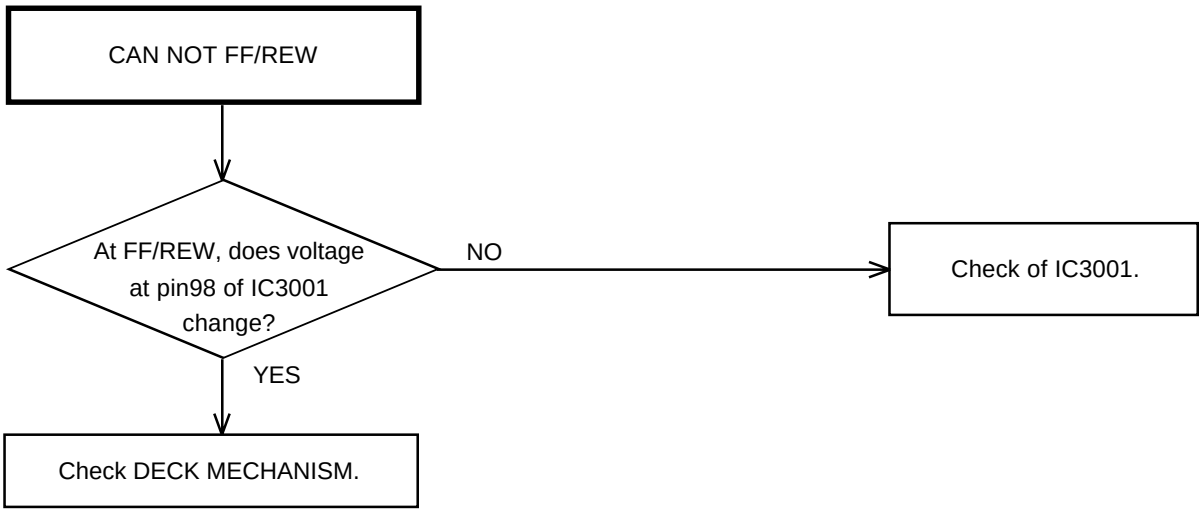
TROUBLESHOOTING GUIDE


The CASSETTE TAPE CAN NOT BE INSERTED
Does WORM GEAR of cassette loading block move?
NO
Check WORM GEAR of cassette loading block.
YES
When a CASSETTE can not inserted, is pin 25 of IC3001 5V ?
NO
Check LED of DECK, PHOTO SENSOR.
YES
When a CASSETTE is inserted, is pin 8 of CP3001 12.6V ?
YES
Change LOADING MOTOR.
NO
Check circuit of POWER BLOCK.

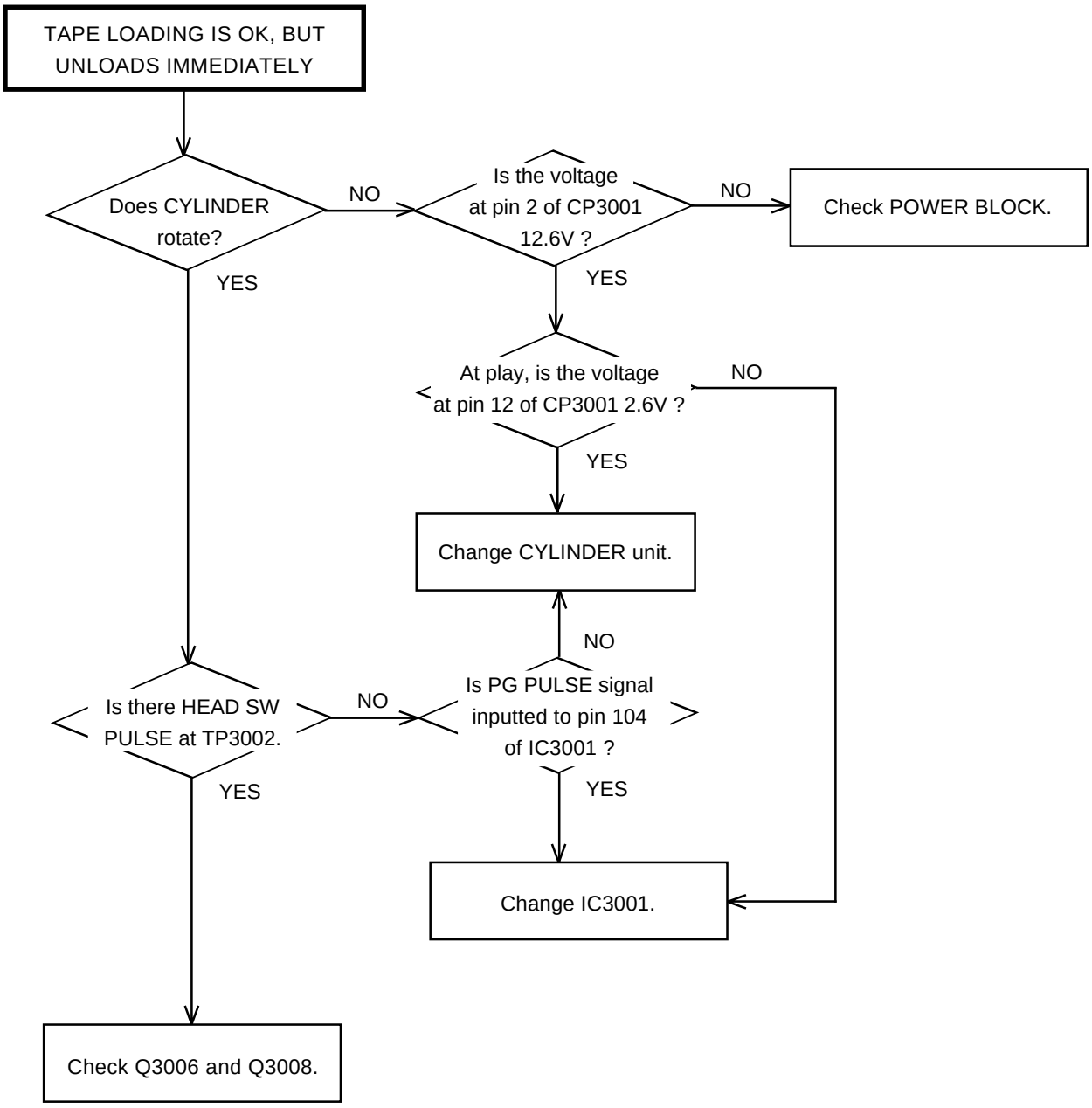
TROUBLESHOOTING GUIDE



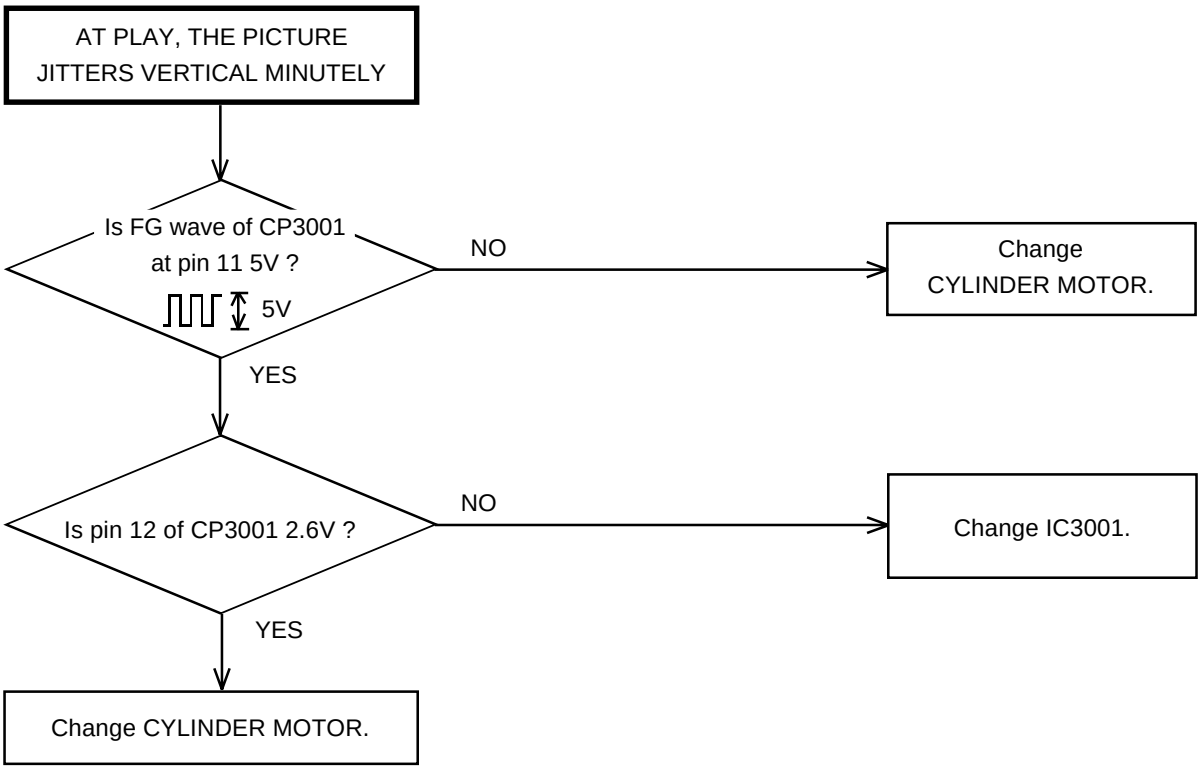
TROUBLESHOOTING GUIDE



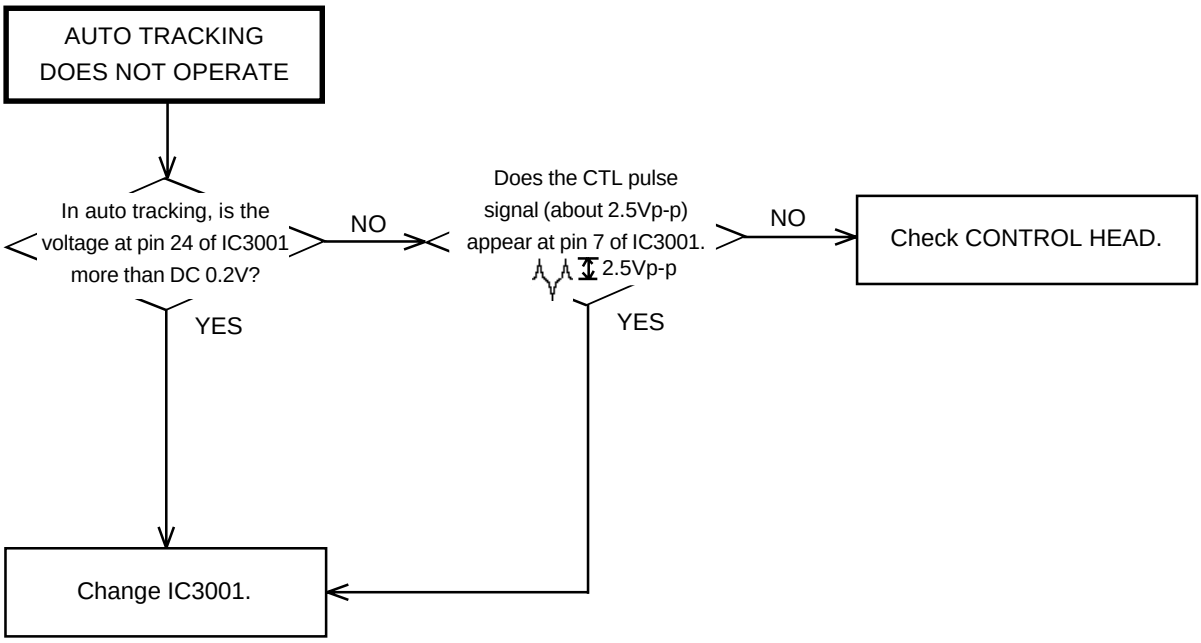
TROUBLESHOOTING GUIDE



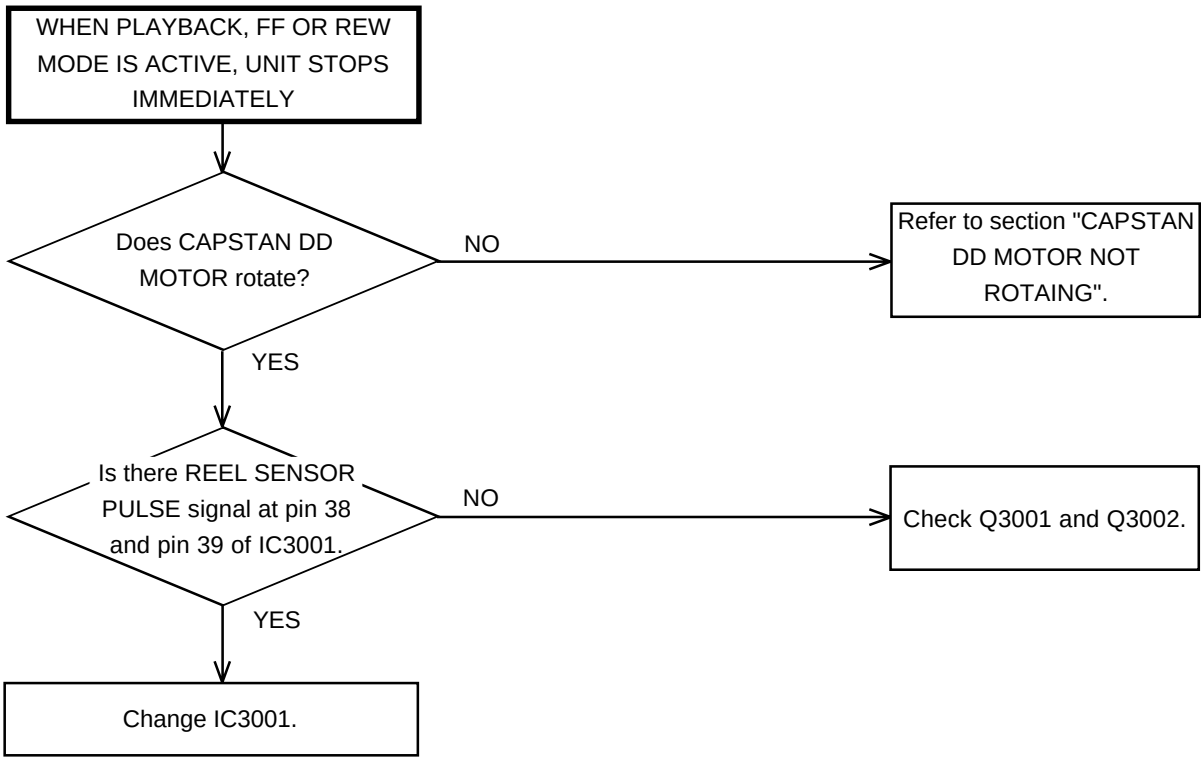
TROUBLESHOOTING GUIDE



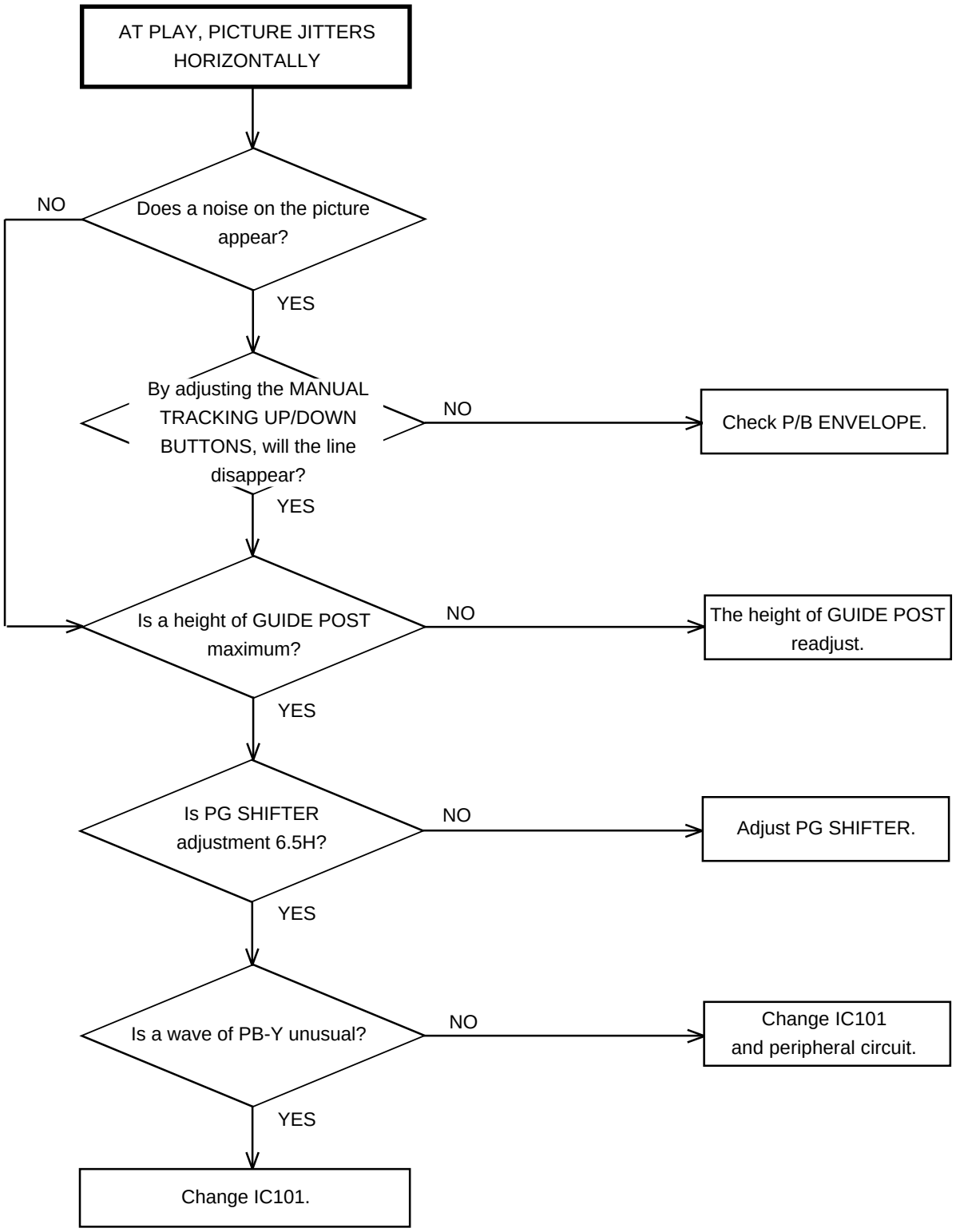
TROUBLESHOOTING GUIDE



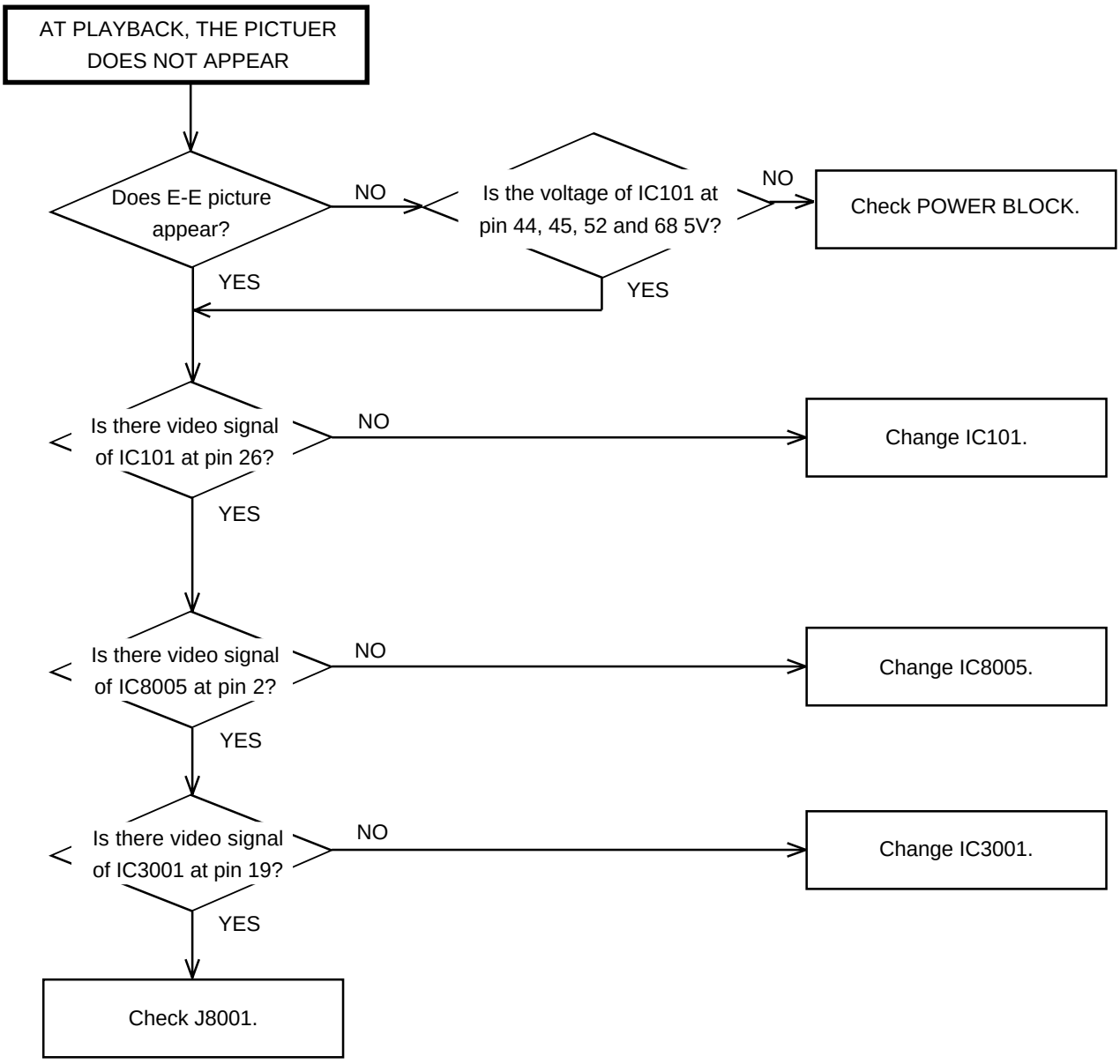
TROUBLESHOOTING GUIDE


WHEN PLAYBACK, FF OR REW MODE IS ACTIVE, UNIT STOPS IMMEDIATELY
Does CAPSTAN DD MOTOR rotate?
NO
Refer to section "CAPSTAN DD MOTOR NOT ROTAING".
YES
Is there REEL SENSOR PULSE signal at pin 38 and pin 39 of IC3001.
NO
Check Q3001 and Q3002.
YES
Change IC3001.

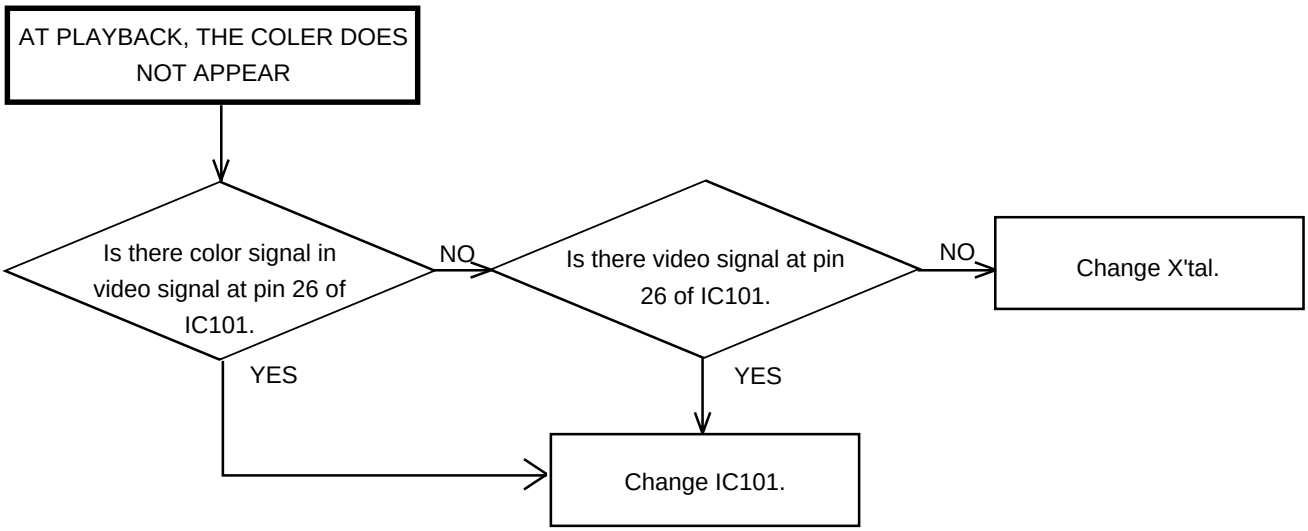
TROUBLESHOOTING GUIDE



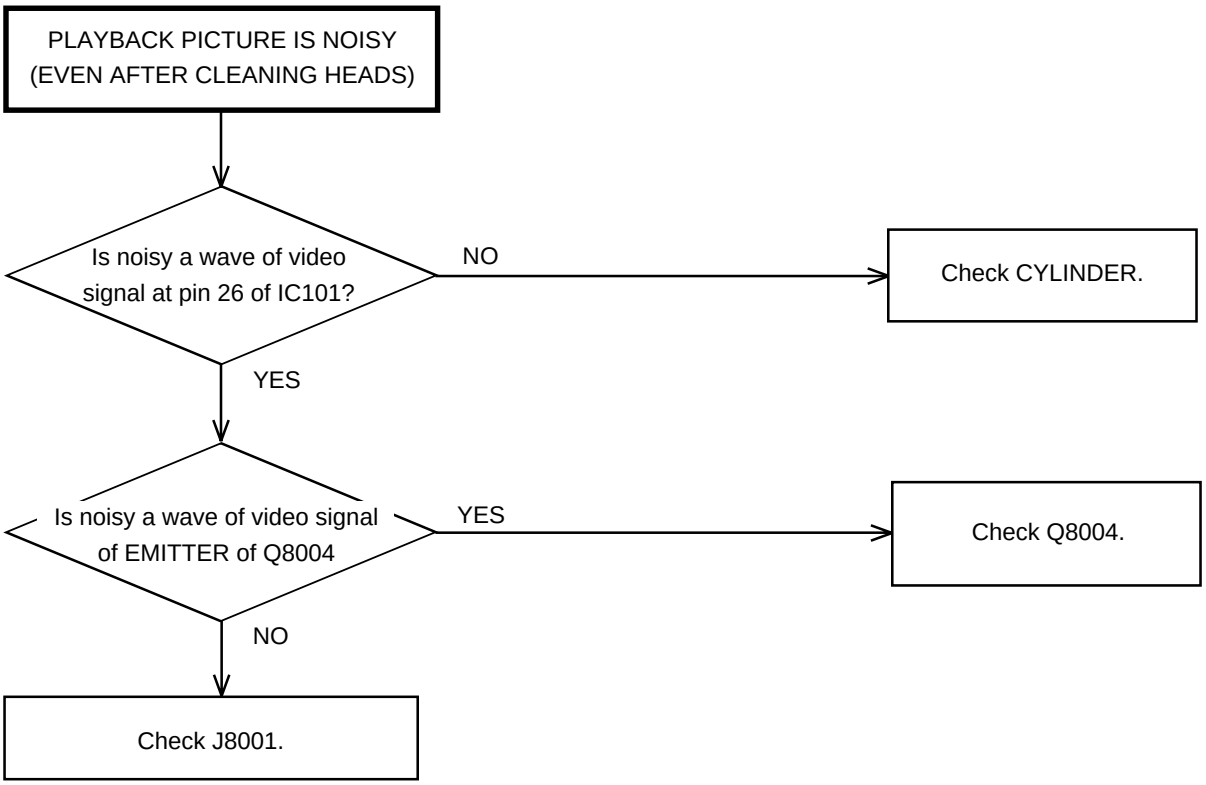
TROUBLESHOOTING GUIDE



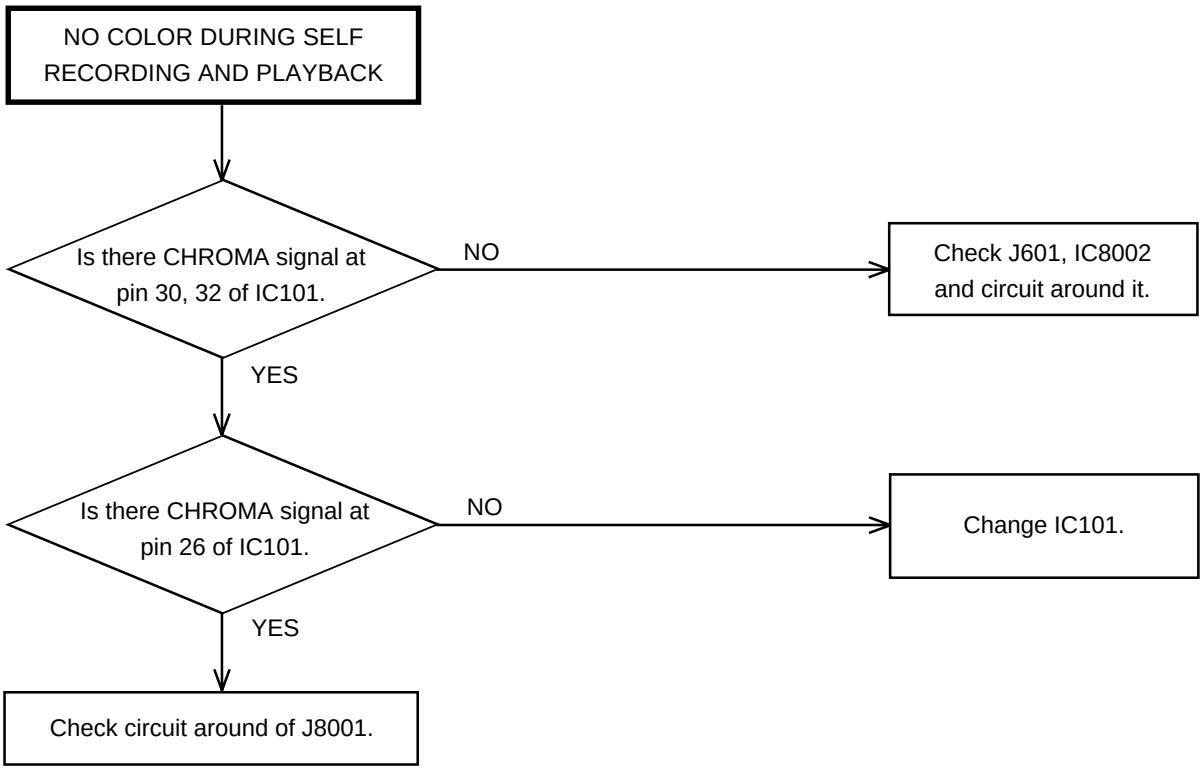
TROUBLESHOOTING GUIDE


AT PLAYBACK, THE COLER DOES NOT APPEAR
Is there color signal in video signal at pin 26 of IC101.
NO
Is there video signal at pin 26 of IC101.
NO
Change X'tal.
YES
YES
Change IC101.

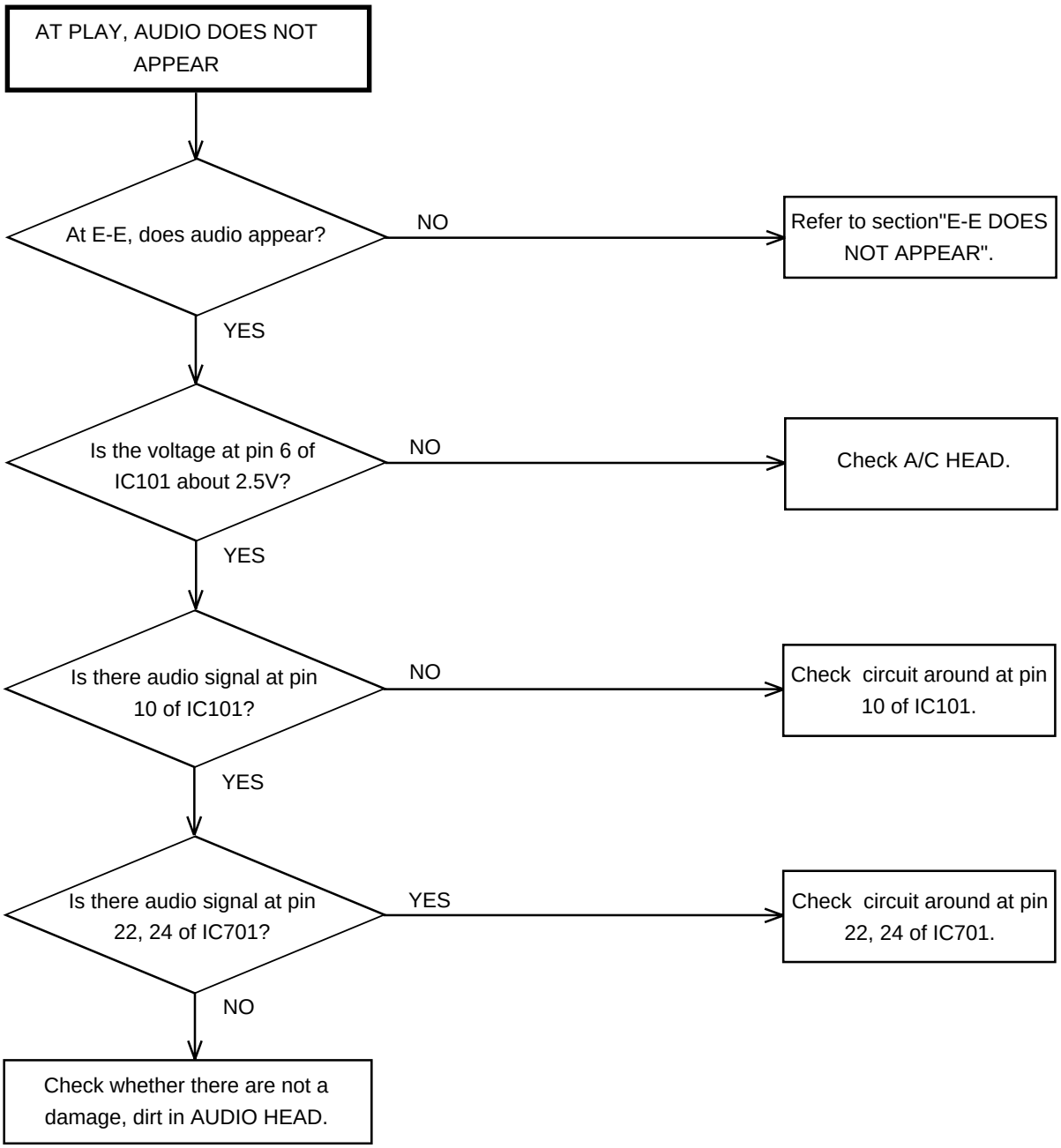
TROUBLESHOOTING GUIDE



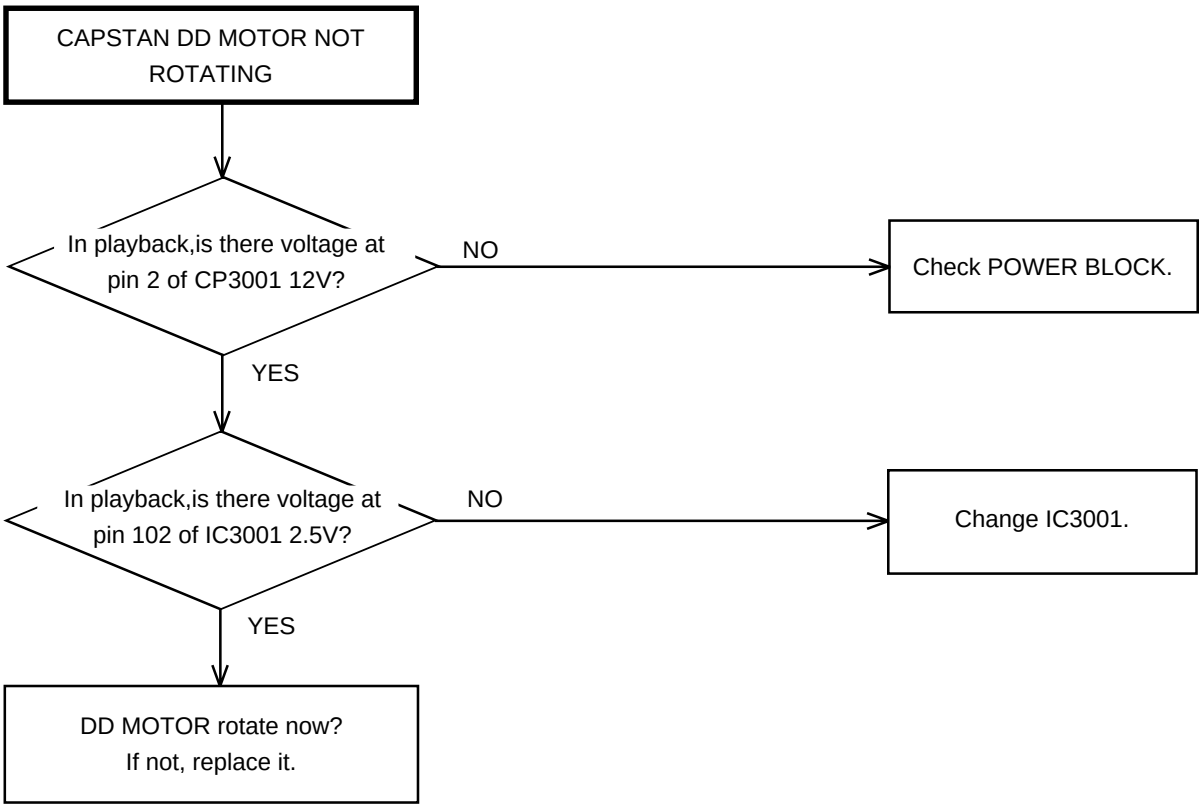
TROUBLESHOOTING GUIDE


NO COLOR DURING SELF RECORDING AND PLAYBACK
Is there CHROMA signal at pin 30, 32 of IC101.
NO
Check J601, IC8002 and circuit around it.
YES
Is there CHROMA signal at pin 26 of IC101.
NO
Change IC101.
YES
Check circuit around of J8001.

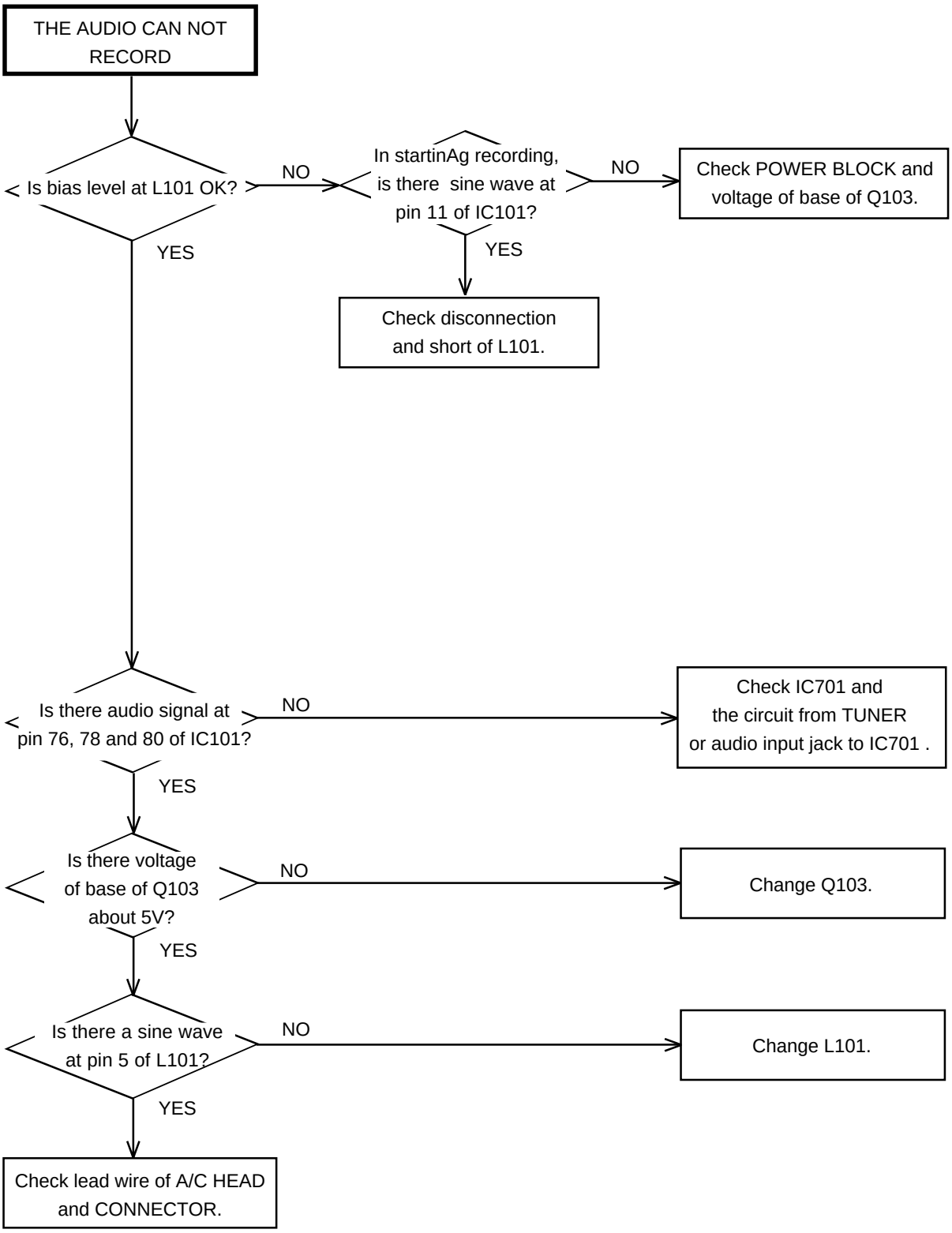
TROUBLESHOOTING GUIDE


AT PLAY, AUDIO DOES NOT APPEAR
At E-E, does audio appear?
NO
Refer to section"E-E DOES NOT APPEAR".
YES
Is the voltage at pin 6 of IC101 about 2.5V?
NO
Check A/C HEAD.
YES
Is there audio signal at pin 10 of IC101?
NO
Check circuit around at pin 10 of IC101.
YES
Is there audio signal at pin 22, 24 of IC701?
YES
Check circuit around at pin 22, 24 of IC701.
NO
Check whether there are not a damage, dirt in AUDIO HEAD.

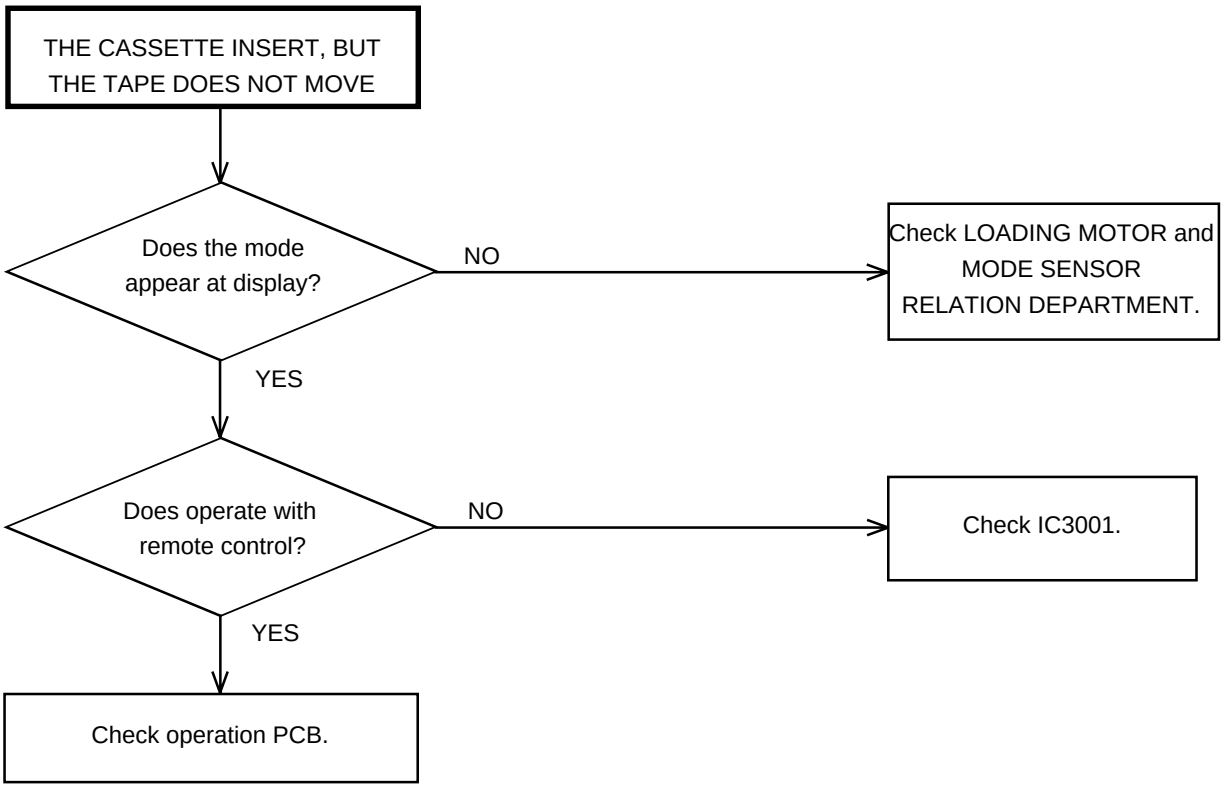
TROUBLESHOOTING GUIDE



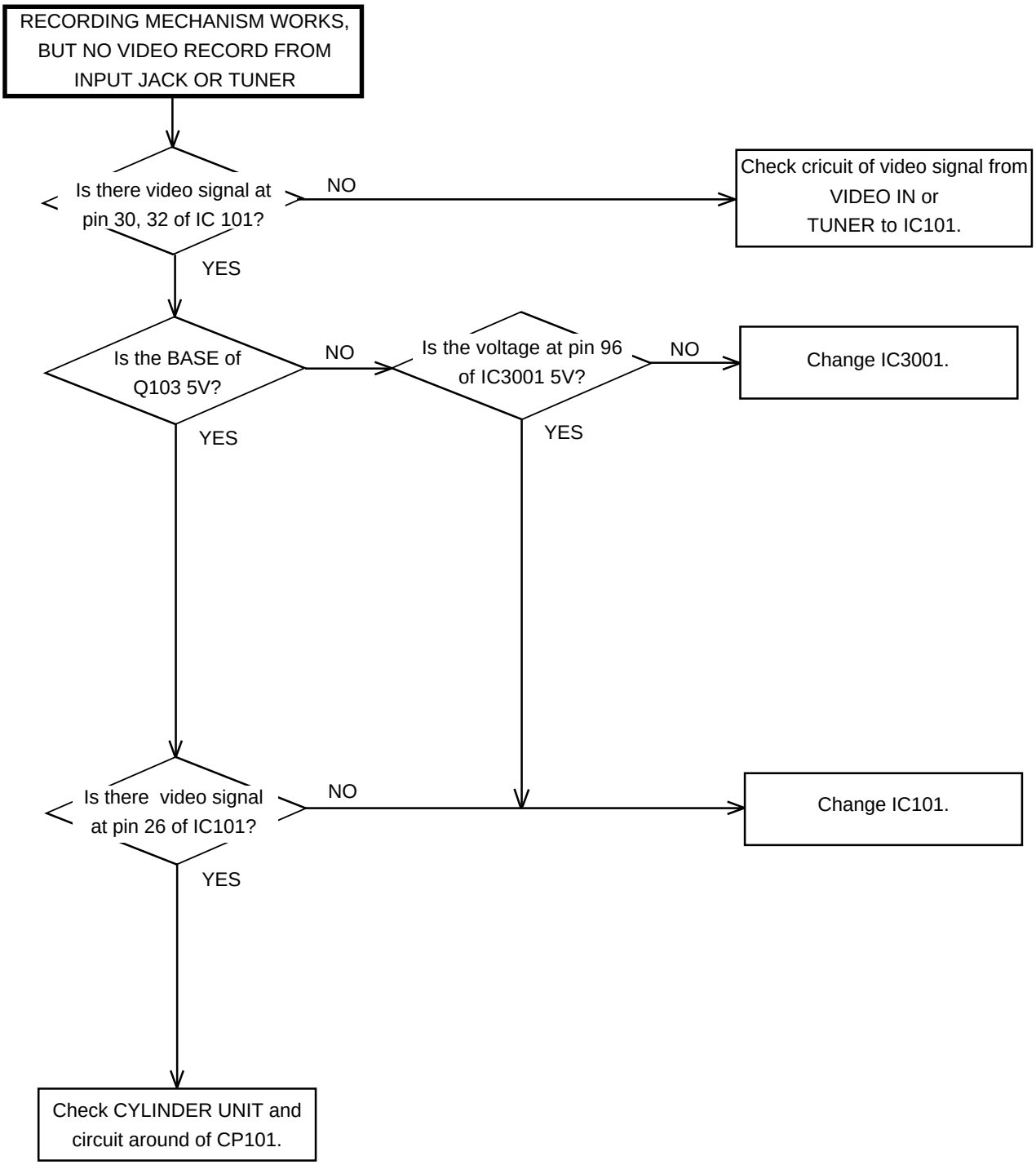
TROUBLESHOOTING GUIDE


THE AUDIO CAN NOT RECORD
Is bias level at L101 OK?
NO
In startinAg recording, is there sine wave at pin 11 of IC101?
NO
Check POWER BLOCK and voltage of base of Q103.
YES
YES
Check disconnection and short of L101.
Is there audio signal at pin 76, 78 and 80 of IC101?
NO
Check IC701 and the circuit from TUNER or audio input jack to IC701 .
YES
Is there voltage of base of Q103 about 5V?
NO
Change Q103.
YES
Is there a sine wave at pin 5 of L101?
NO
Change L101.
YES
Check lead wire of A/C HEAD and CONNECTOR.

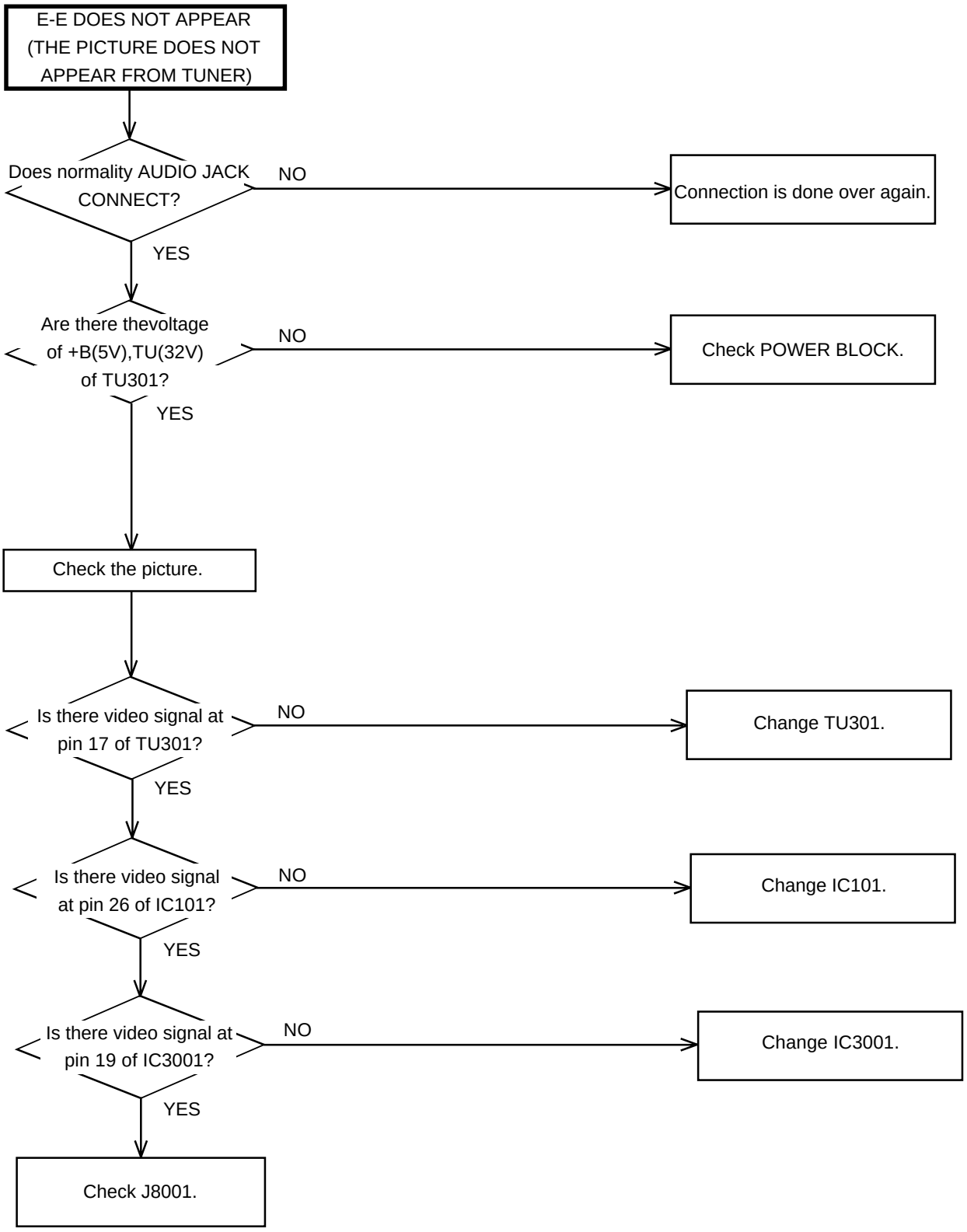
TROUBLESHOOTING GUIDE



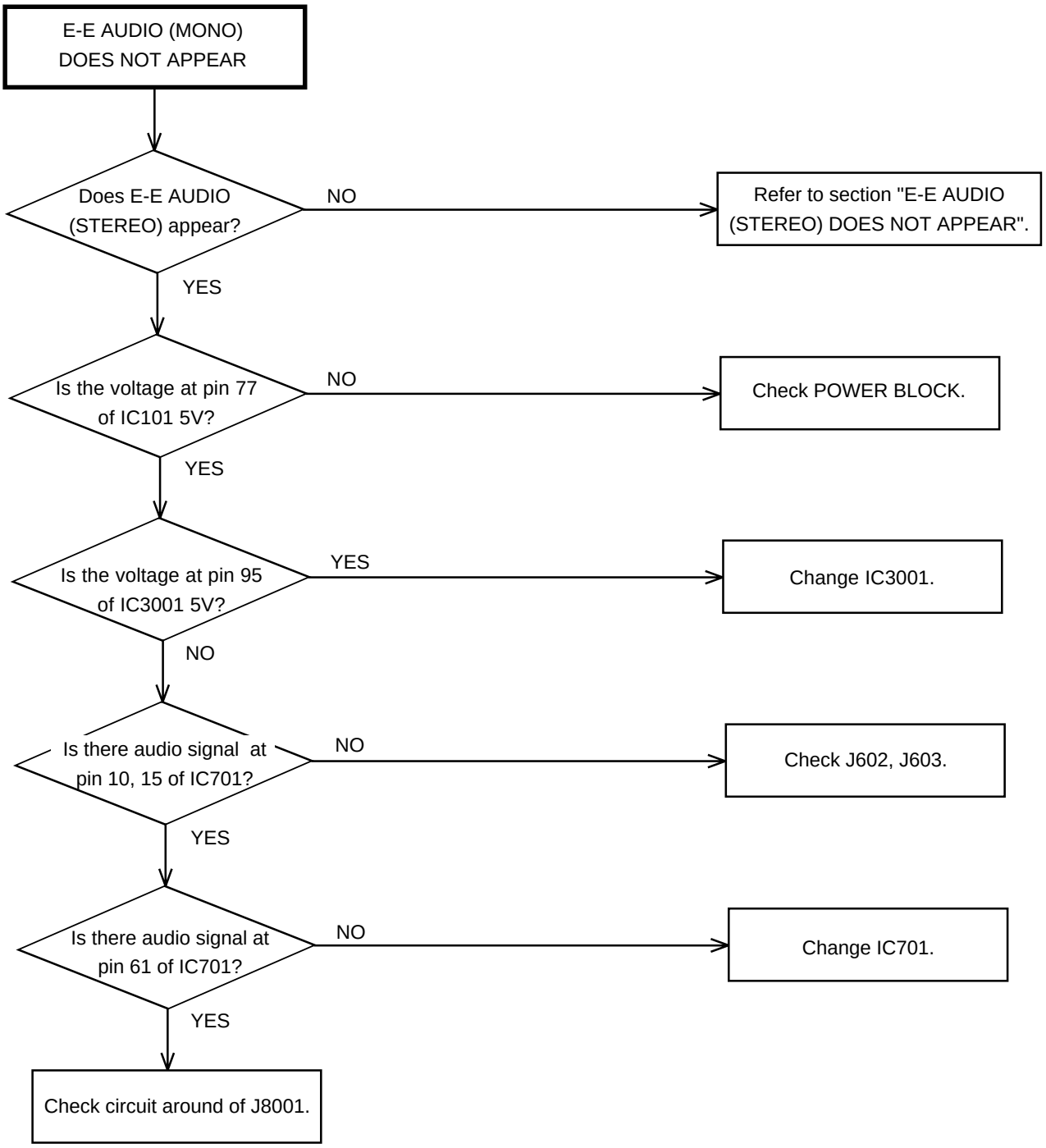
TROUBLESHOOTING GUIDE


RECORDING MECHANISM WORKS, BUT NO VIDEO RECORD FROM INPUT JACK OR TUNER
Is there video signal at pin 30, 32 of IC 101?
NO
Check cricuit of video signal from VIDEO IN or TUNER to IC101.
YES
Is the BASE of Q103 5V?
NO
Is the voltage at pin 96 of IC3001 5V?
NO
Change IC3001.
YES
YES
Is there video signal at pin 26 of IC101?
NO
Change IC101.
YES
Check CYLINDER UNIT and circuit around of CP101.

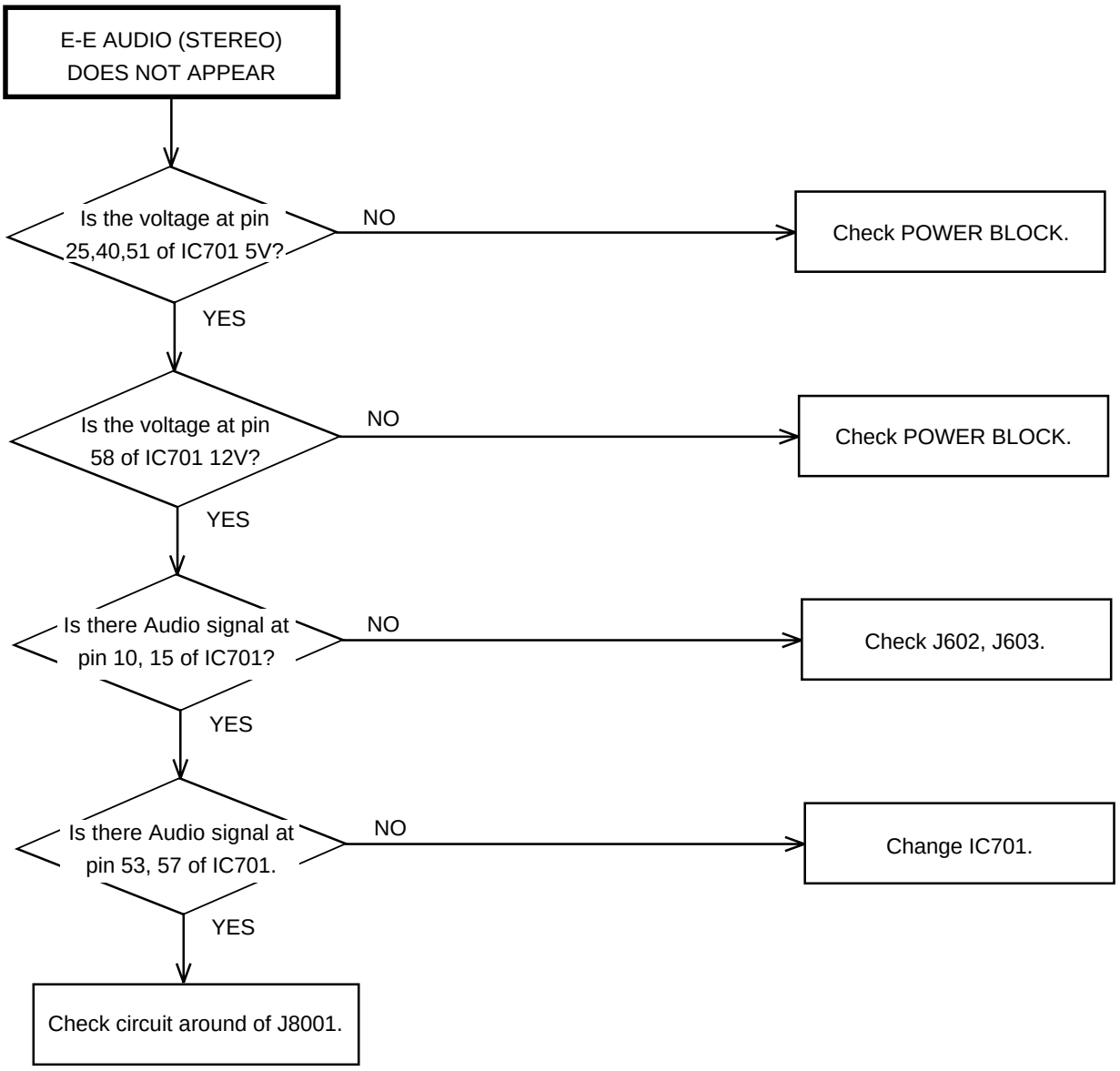
TROUBLESHOOTING GUIDE



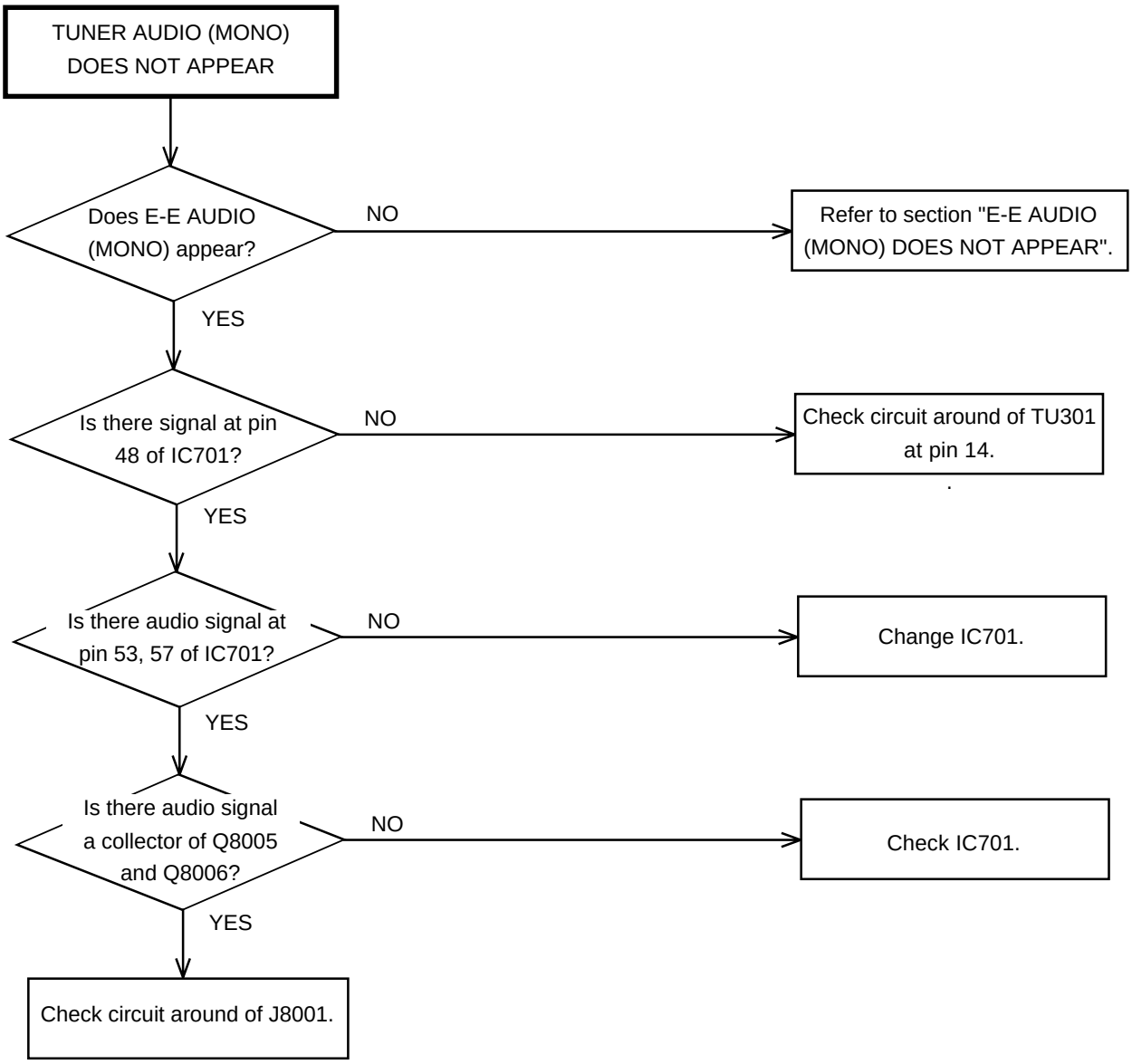
TROUBLESHOOTING GUIDE



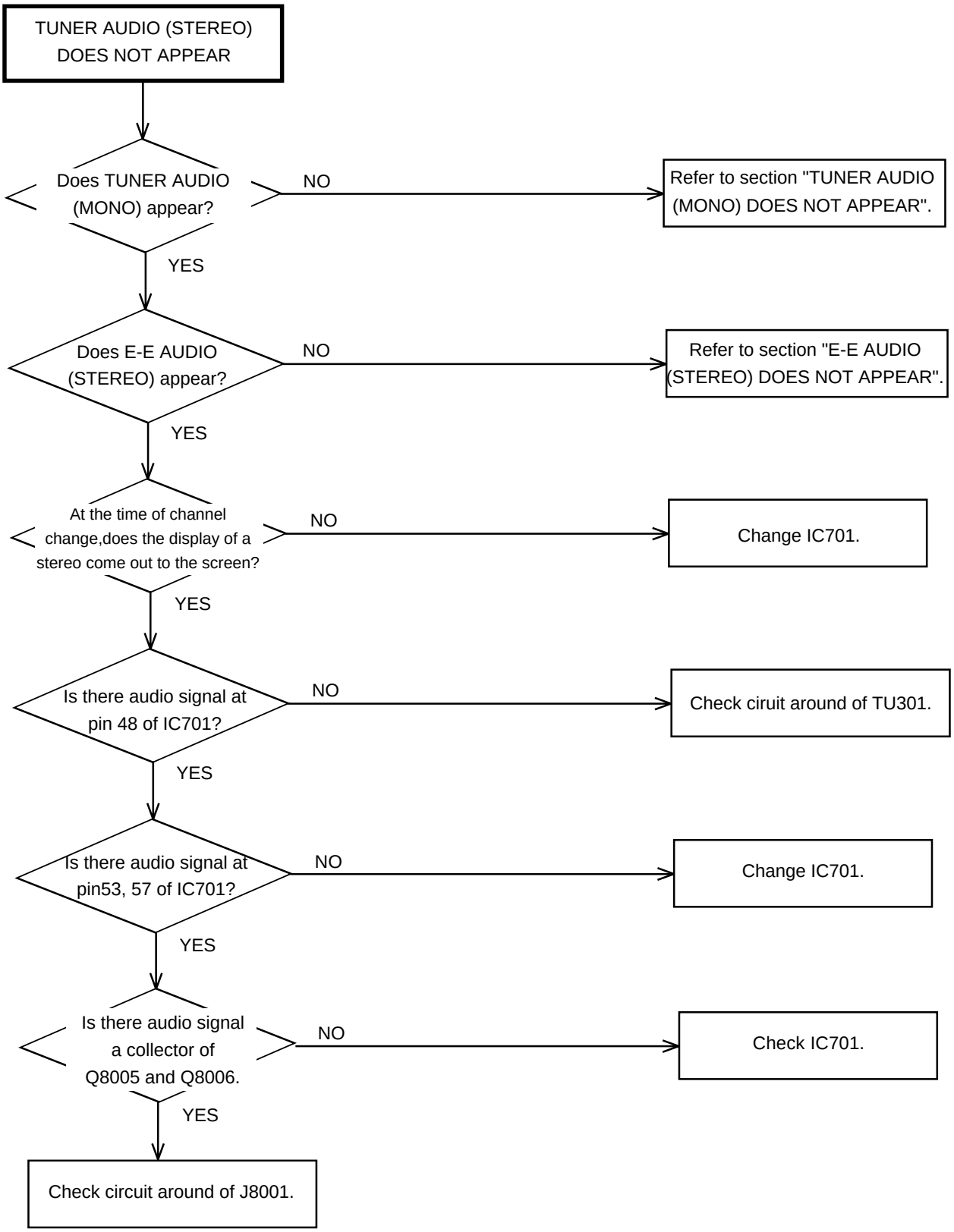
TROUBLESHOOTING GUIDE



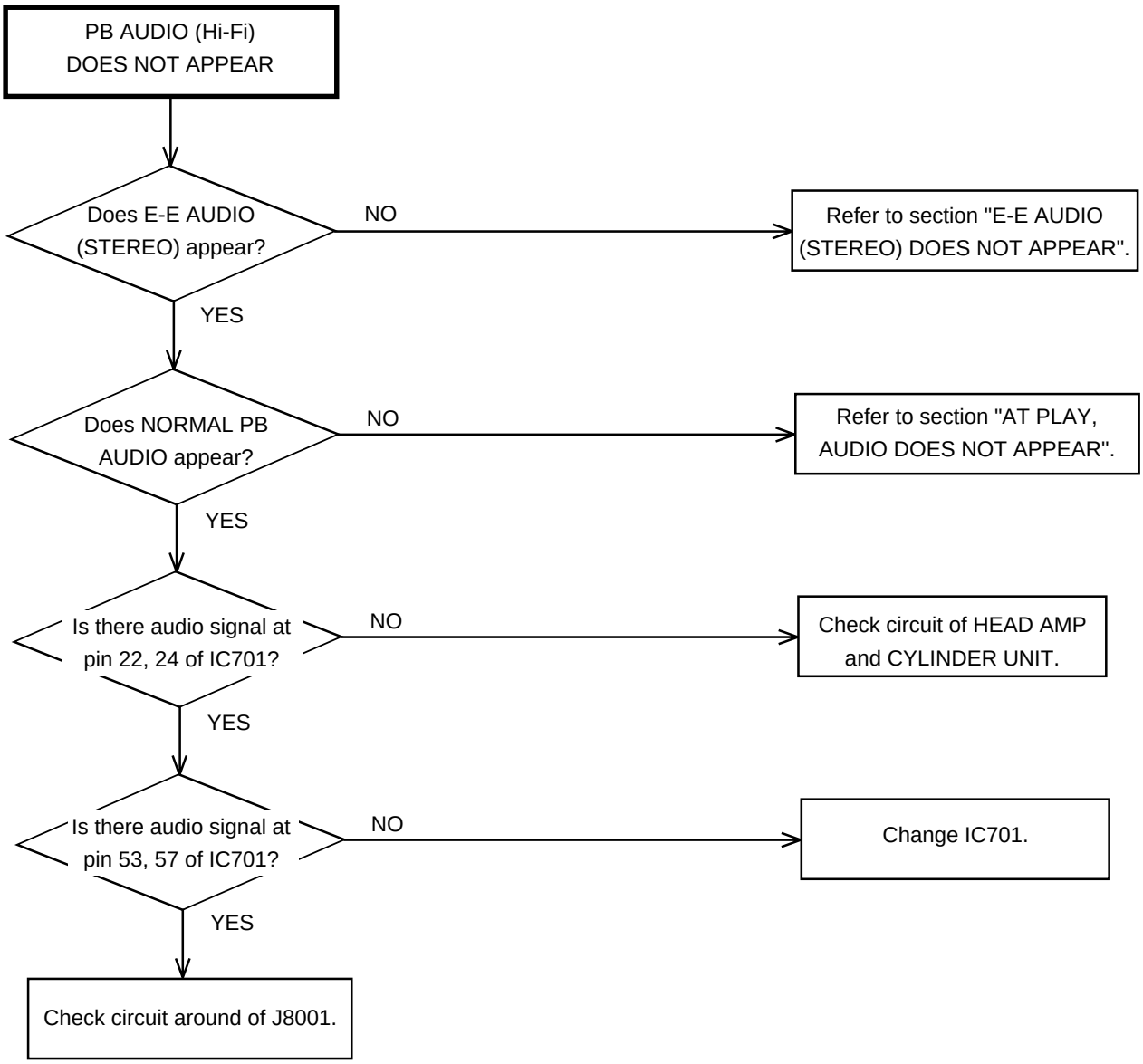
TROUBLESHOOTING GUIDE


TUNER AUDIO (MONO) DOES NOT APPEAR
Does E-E AUDIO (MONO) appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
Is there signal at pin 48 of IC701?
NO
Check circuit around of TU301 at pin 14.
YES
Is there audio signal at pin 53, 57 of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006?
NO
Check IC701.
YES
Check circuit around of J8001.

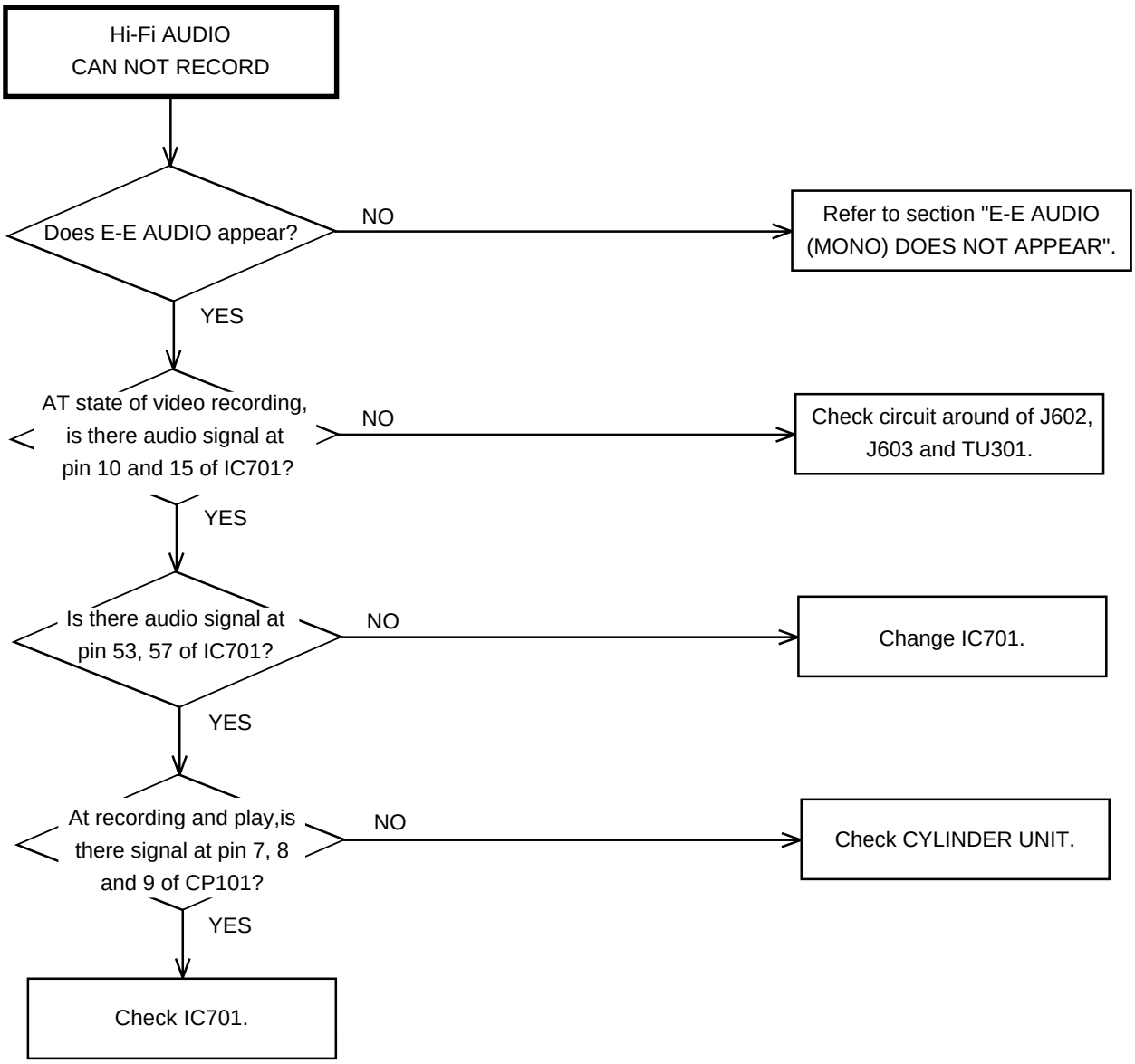
TROUBLESHOOTING GUIDE


TUNER AUDIO (STEREO) DOES NOT APPEAR
Does TUNER AUDIO (MONO) appear?
NO
Refer to section "TUNER AUDIO (MONO) DOES NOT APPEAR".
YES
Does E-E AUDIO (STEREO) appear?
NO
Refer to section "E-E AUDIO (STEREO) DOES NOT APPEAR".
YES
At the time of channel change,does the display of a stereo come out to the screen?
NO
Change IC701.
YES
Is there audio signal at pin 48 of IC701?
NO
Check ciruit around of TU301.
YES
Is there audio signal at pin53, 57 of IC701?
NO
Change IC701.
YES
Is there audio signal a collector of Q8005 and Q8006.
NO
Check IC701.
YES
Check circuit around of J8001.

TROUBLESHOOTING GUIDE

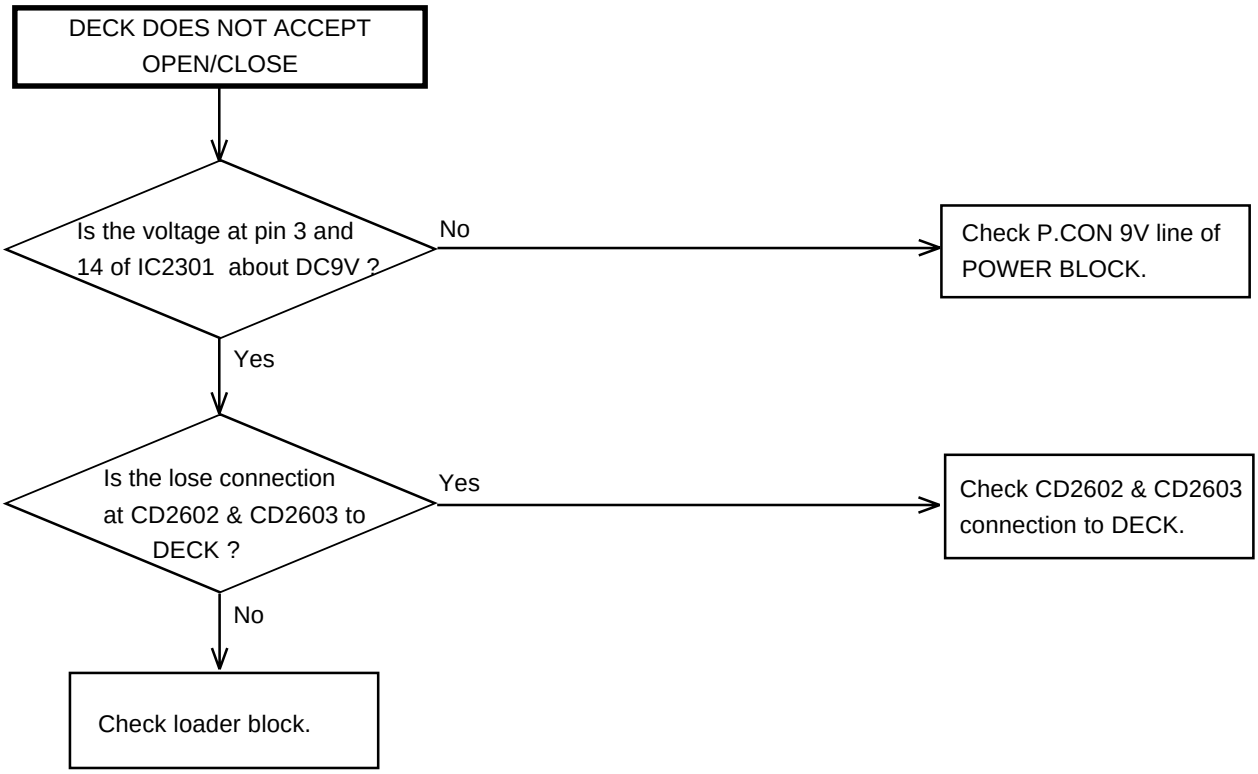


TROUBLESHOOTING GUIDE

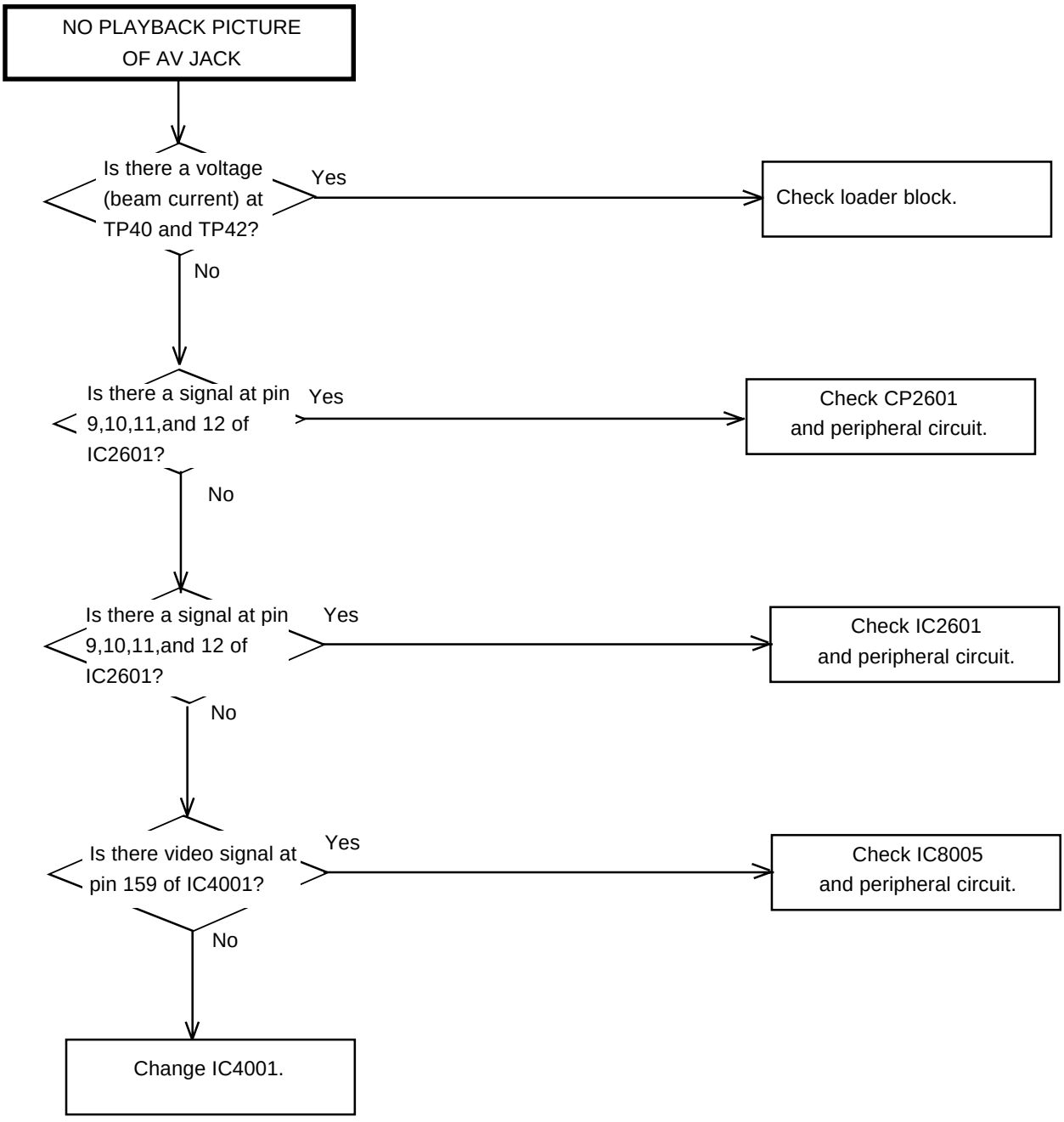

Hi-Fi AUDIO
CAN NOT RECORD
Does E-E AUDIO appear?
NO
Refer to section "E-E AUDIO (MONO) DOES NOT APPEAR".
YES
AT state of video recording, is there audio signal at pin 10 and 15 of IC701?
NO
Check circuit around of J602, J603 and TU301.
YES
Is there audio signal at pin 53, 57 of IC701?
NO
Change IC701.
YES
At recording and play,is there signal at pin 7, 8 and 9 of CP101?
NO
Check CYLINDER UNIT.
YES
Check IC701.

TROUBLESHOOTING GUIDE

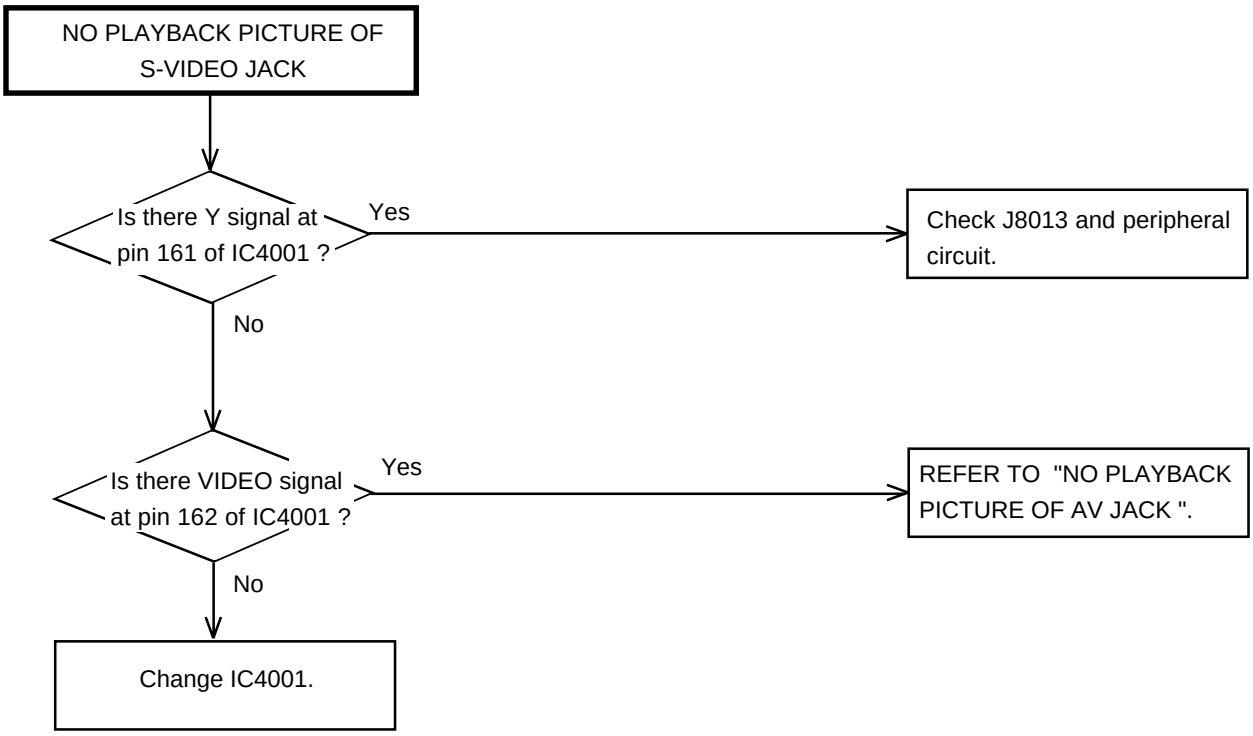
(DVD SECTION)


DECK DOES NOT ACCEPT OPEN/CLOSE
Is the voltage at pin 3 and 14 of IC2301 about DC9V ?
No
Check P.CON 9V line of POWER BLOCK.
Yes
Is the lose connection at CD2602 & CD2603 to DECK ?
Yes
Check CD2602 & CD2603 connection to DECK.
No
Check loader block.

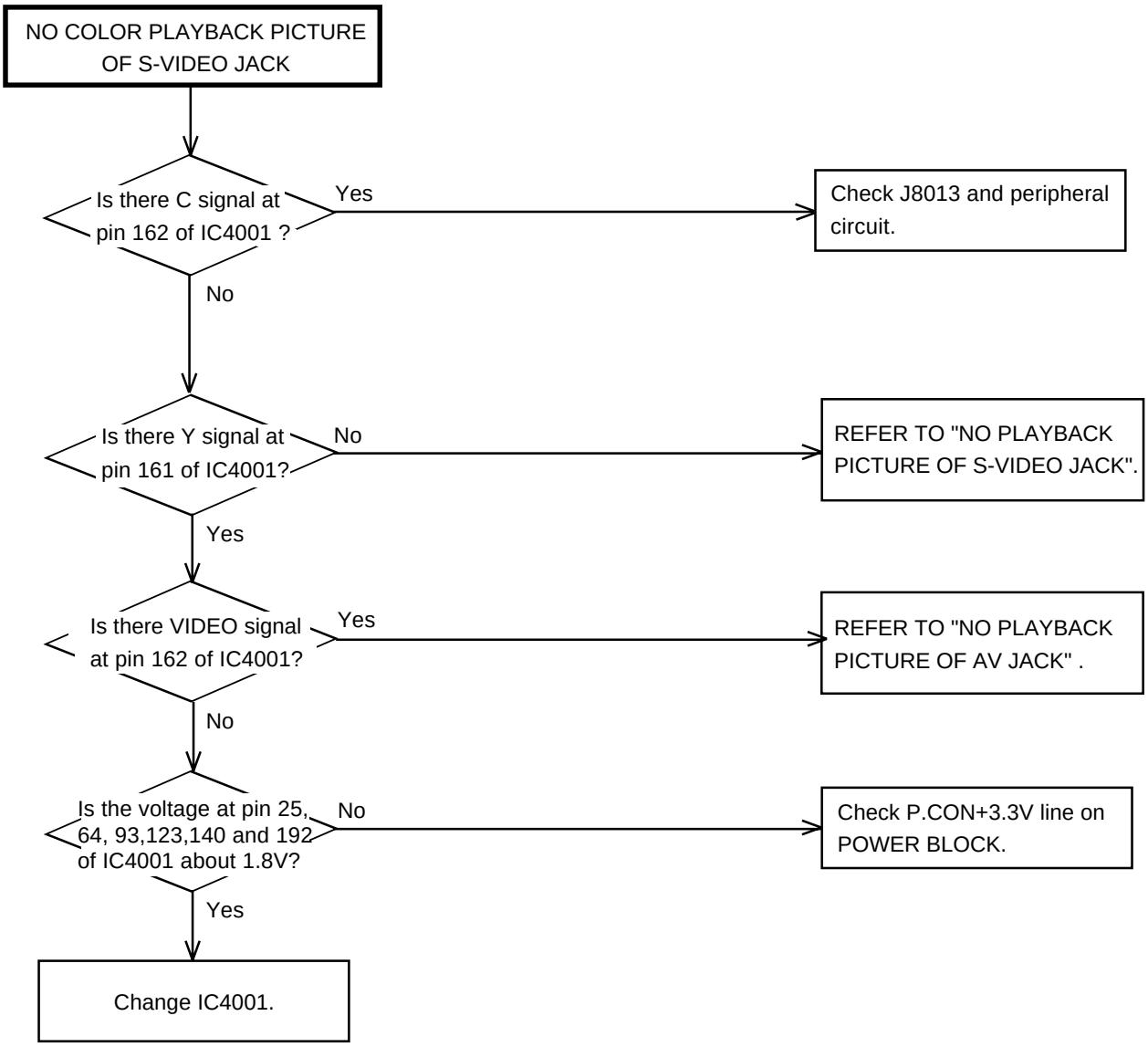
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF AV JACK
Is there a voltage (beam current) at TP40 and TP42?
Yes
Check loader block.
No
Is there a signal at pin 9,10,11,and 12 of IC2601?
Yes
Check CP2601 and peripheral circuit.
No
Is there a signal at pin 9,10,11,and 12 of IC2601?
Yes
Check IC2601 and peripheral circuit.
No
Is there video signal at pin 159 of IC4001?
Yes
Check IC8005 and peripheral circuit.
No
Change IC4001.

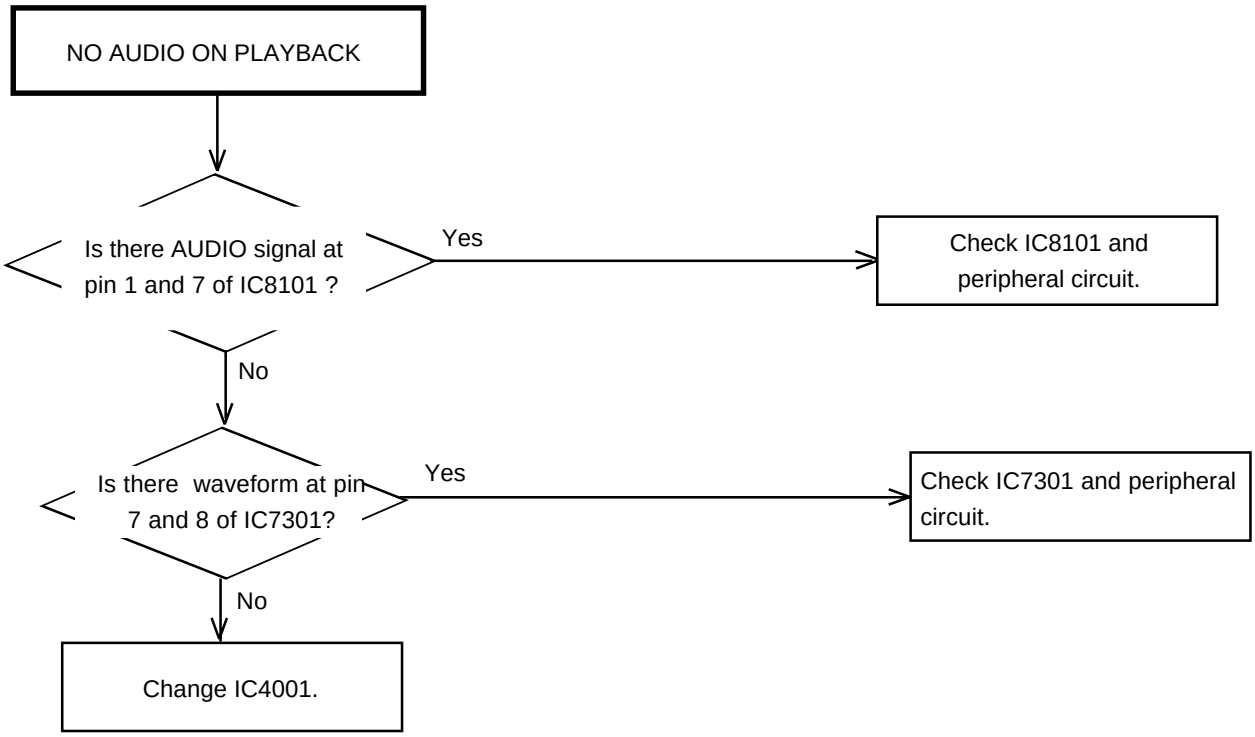
TROUBLESHOOTING GUIDE


NO PLAYBACK PICTURE OF S-VIDEO JACK
Is there Y signal at pin 161 of IC4001 ?
Yes
Check J8013 and peripheral circuit.
No
Is there VIDEO signal at pin 162 of IC4001 ?
Yes
REFER TO "NO PLAYBACK PICTURE OF AV JACK ".
No
Change IC4001.

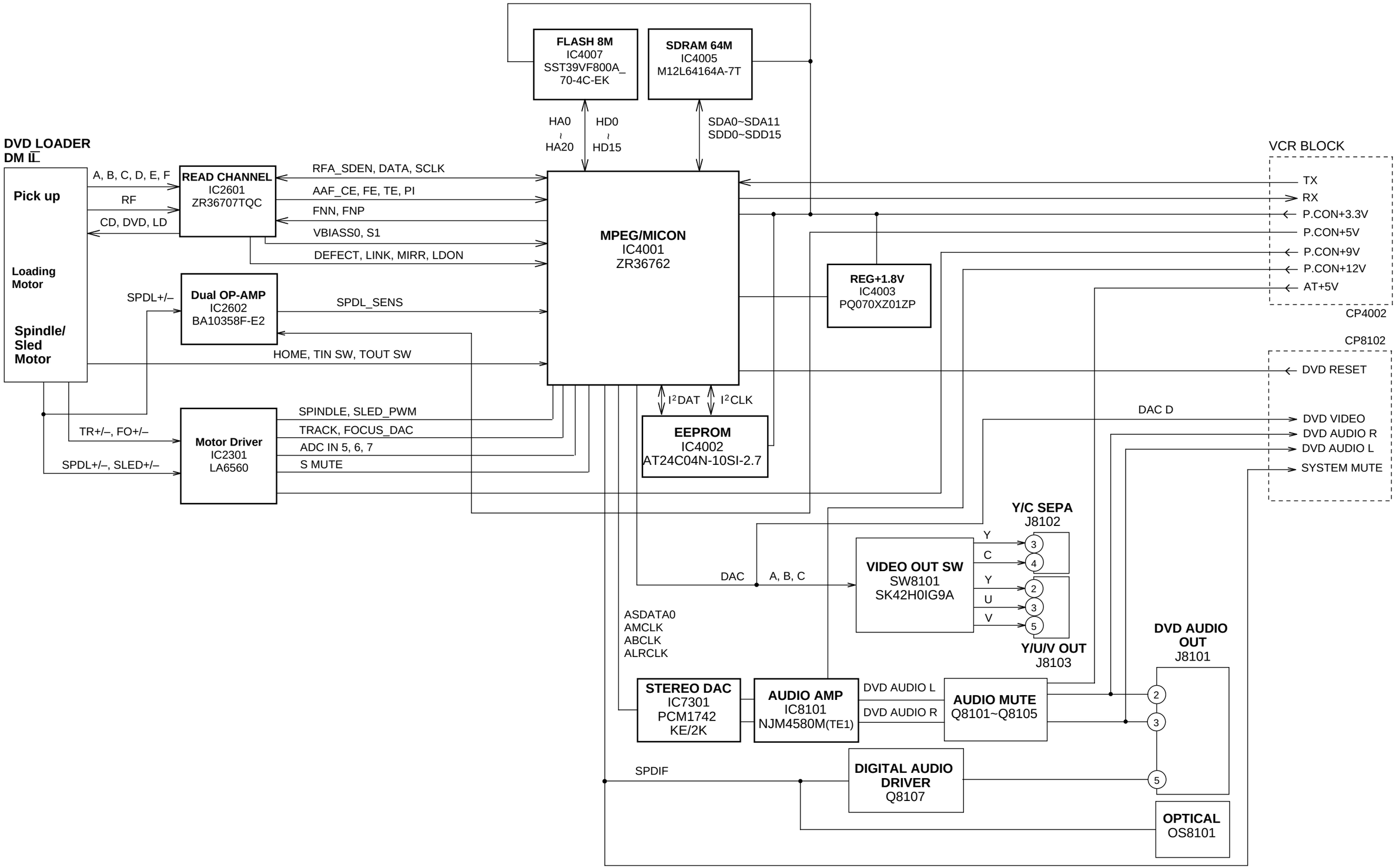
TROUBLESHOOTING GUIDE


NO COLOR PLAYBACK PICTURE OF S-VIDEO JACK
Is there C signal at pin 162 of IC4001 ?
Yes
Check J8013 and peripheral circuit.
No
Is there Y signal at pin 161 of IC4001?
No
REFER TO "NO PLAYBACK PICTURE OF S-VIDEO JACK".
Yes
Is there VIDEO signal at pin 162 of IC4001?
Yes
REFER TO "NO PLAYBACK PICTURE OF AV JACK" .
No
Is the voltage at pin 25, 64, 93,123,140 and 192 of IC4001 about 1.8V?
No
Check P.CON+3.3V line on POWER BLOCK.
Yes
Change IC4001.

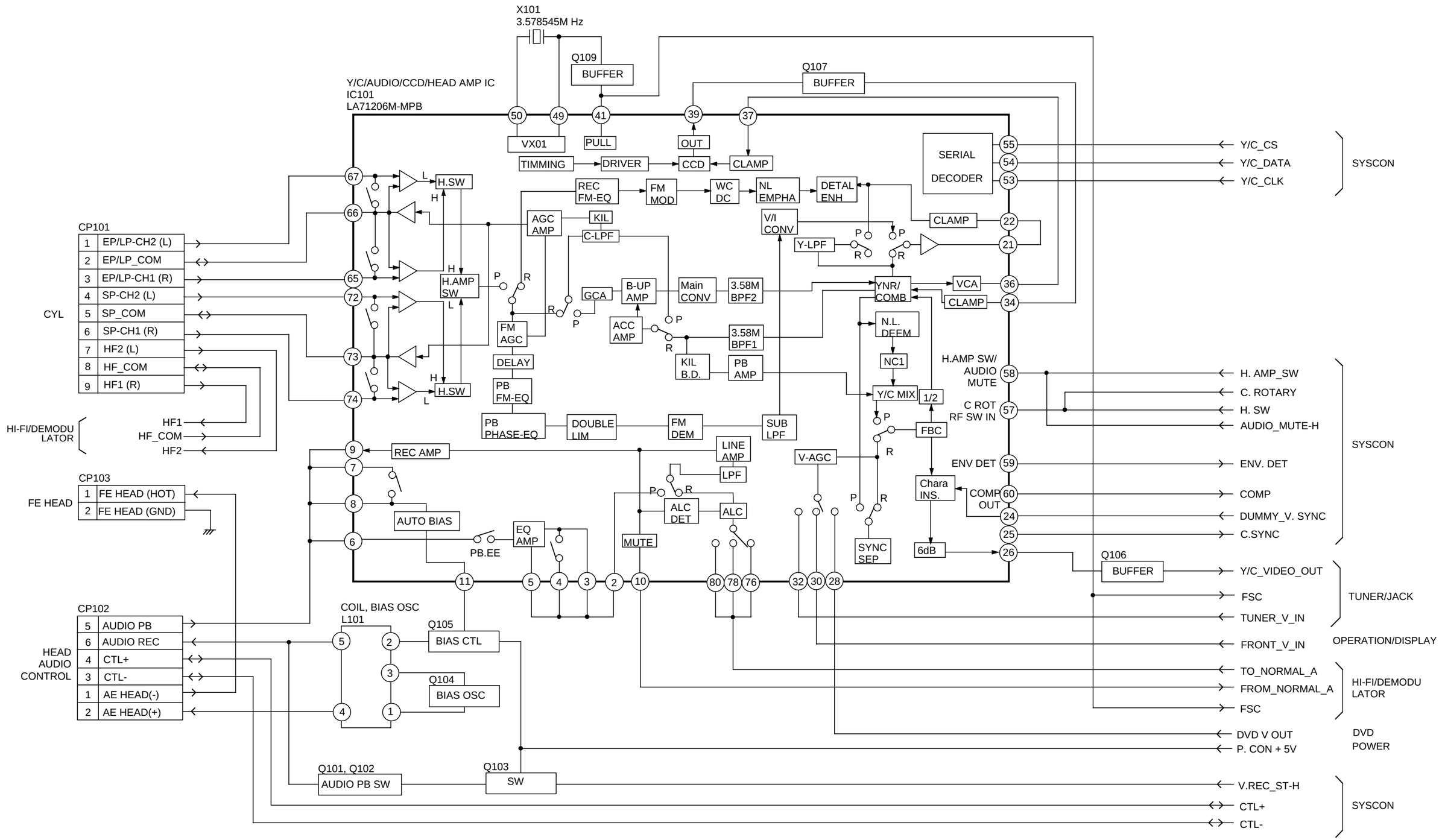
TROUBLESHOOTING GUIDE


NO AUDIO ON PLAYBACK
Is there AUDIO signal at pin 1 and 7 of IC8101 ?
Yes
Check IC8101 and peripheral circuit.
No
Is there waveform at pin 7 and 8 of IC7301?
Yes
Check IC7301 and peripheral circuit.
No
Change IC4001.

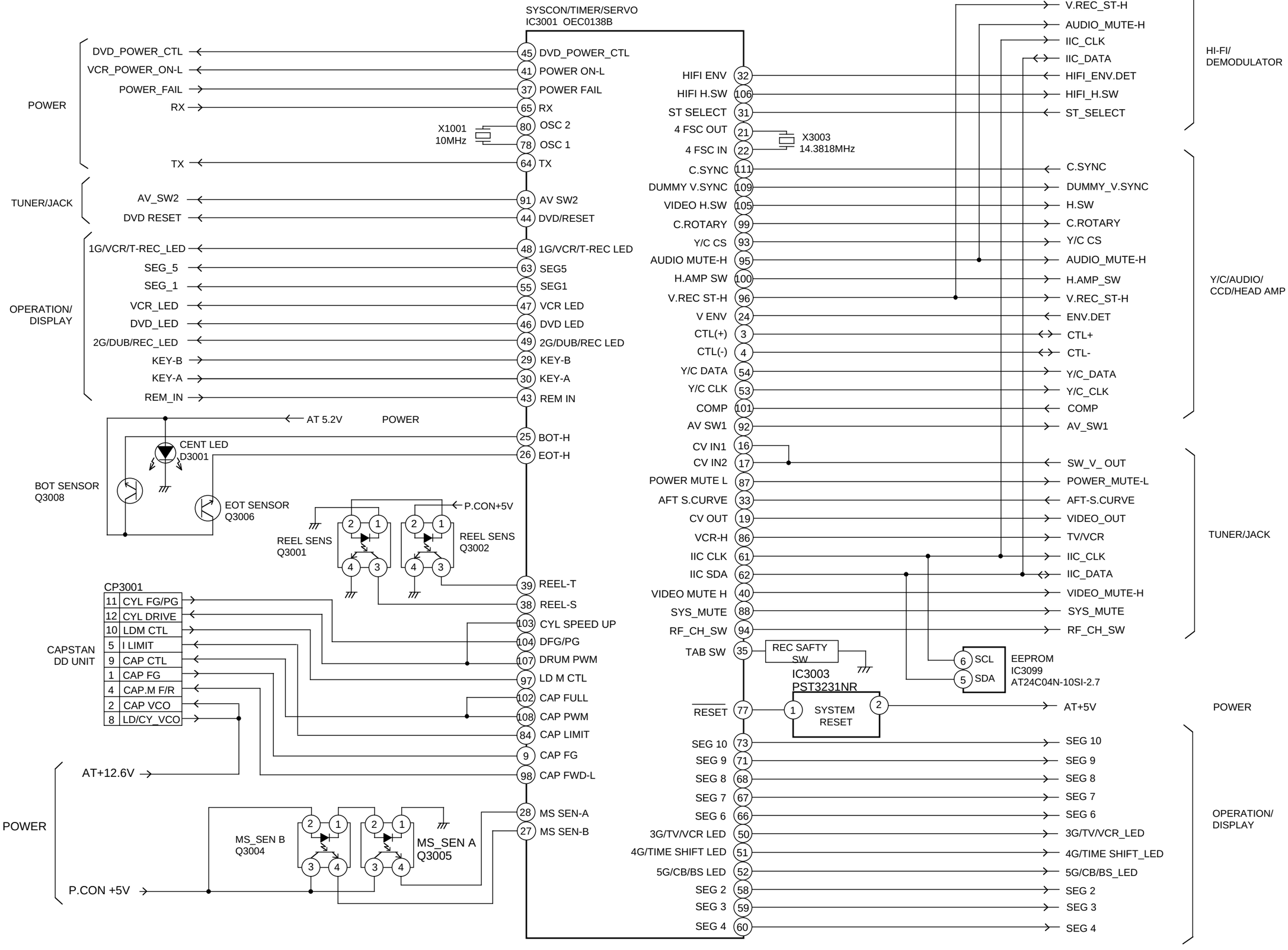
DVD BLOCK DIAGRAM



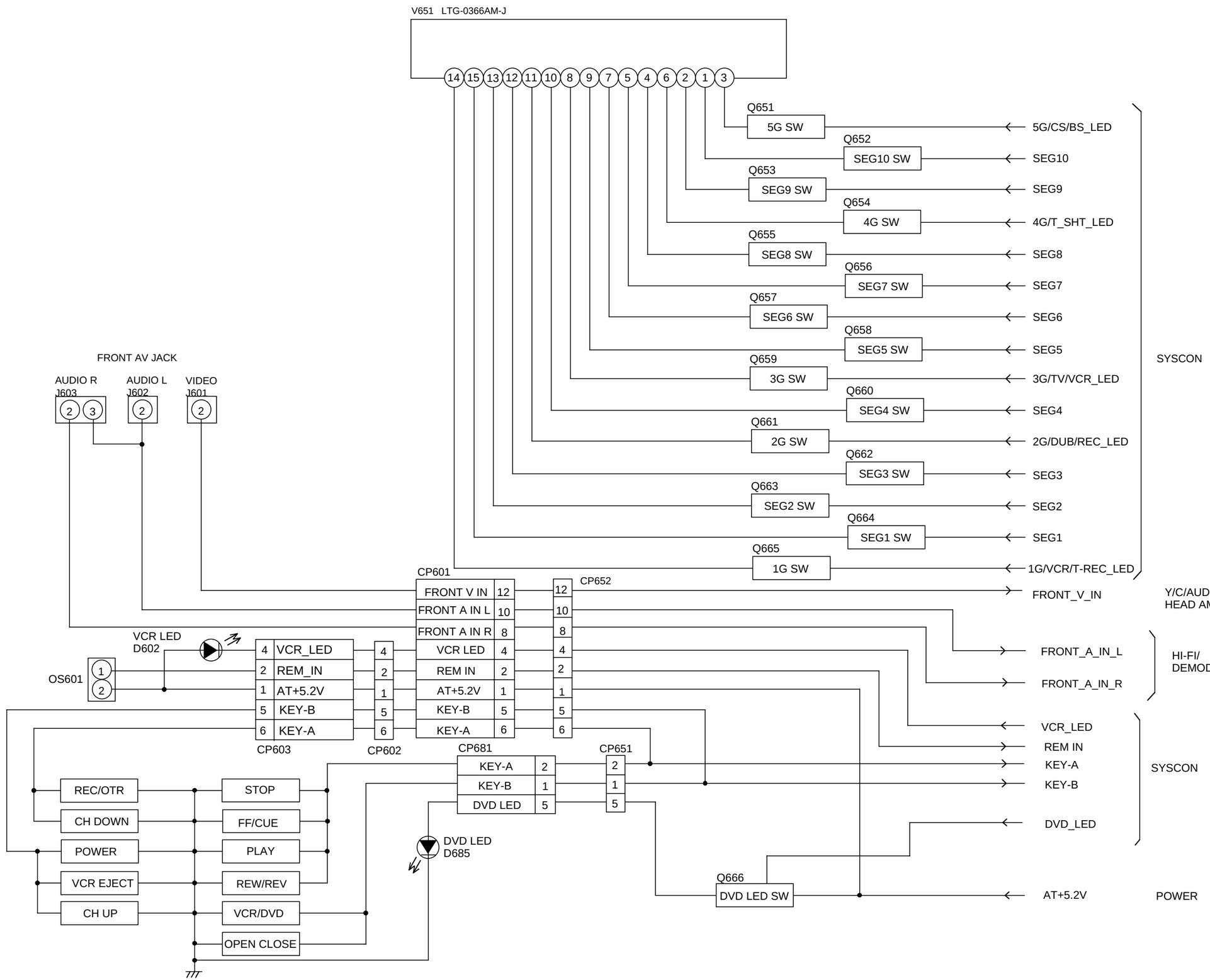
Y/C/AUDIO/CCD/HEAD AMP BLOCK DIAGRAM



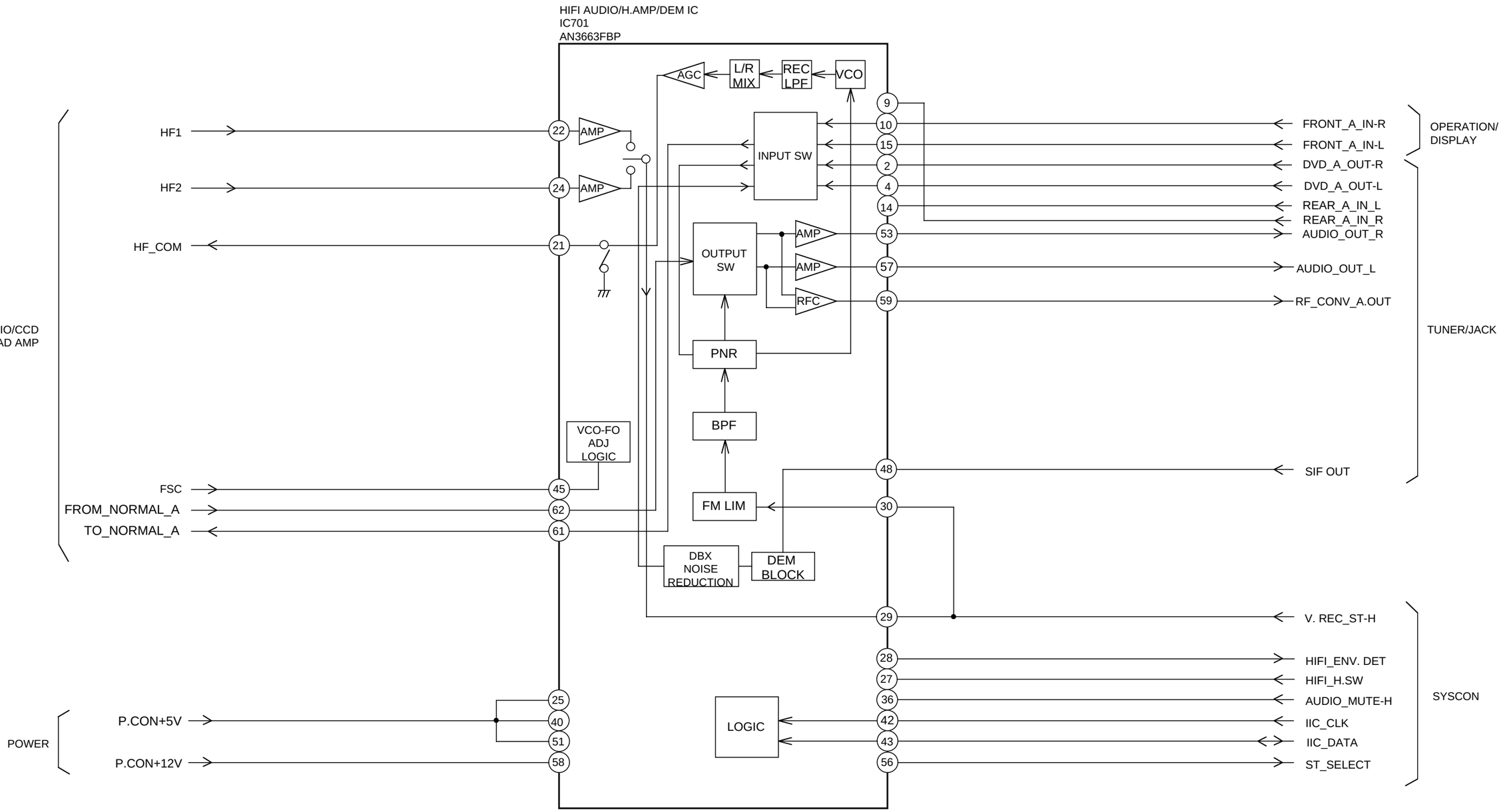
SYSTEM CONTROL BLOCK DIAGRAM



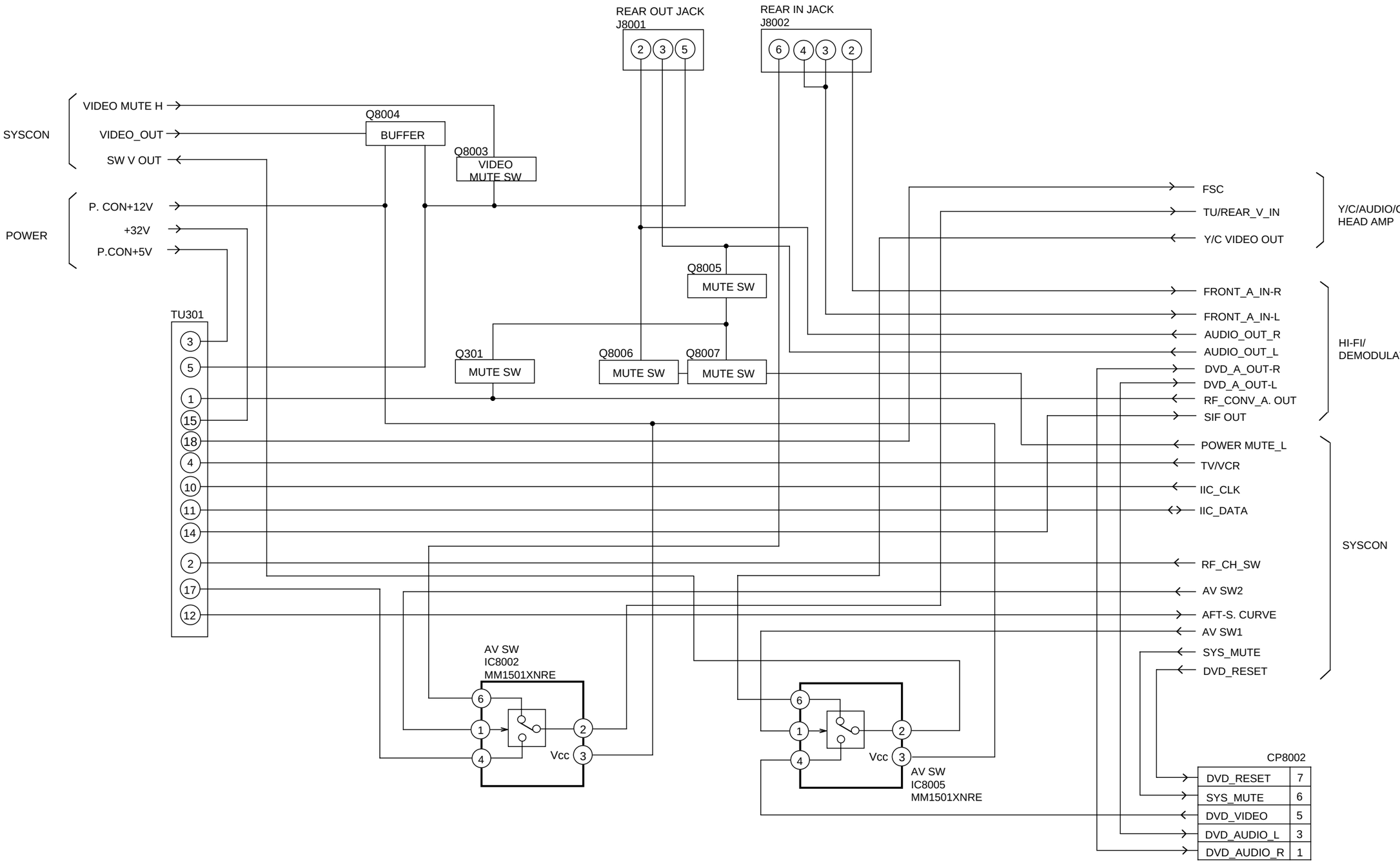
OPERATION/DISPLAY BLOCK DIAGRAM



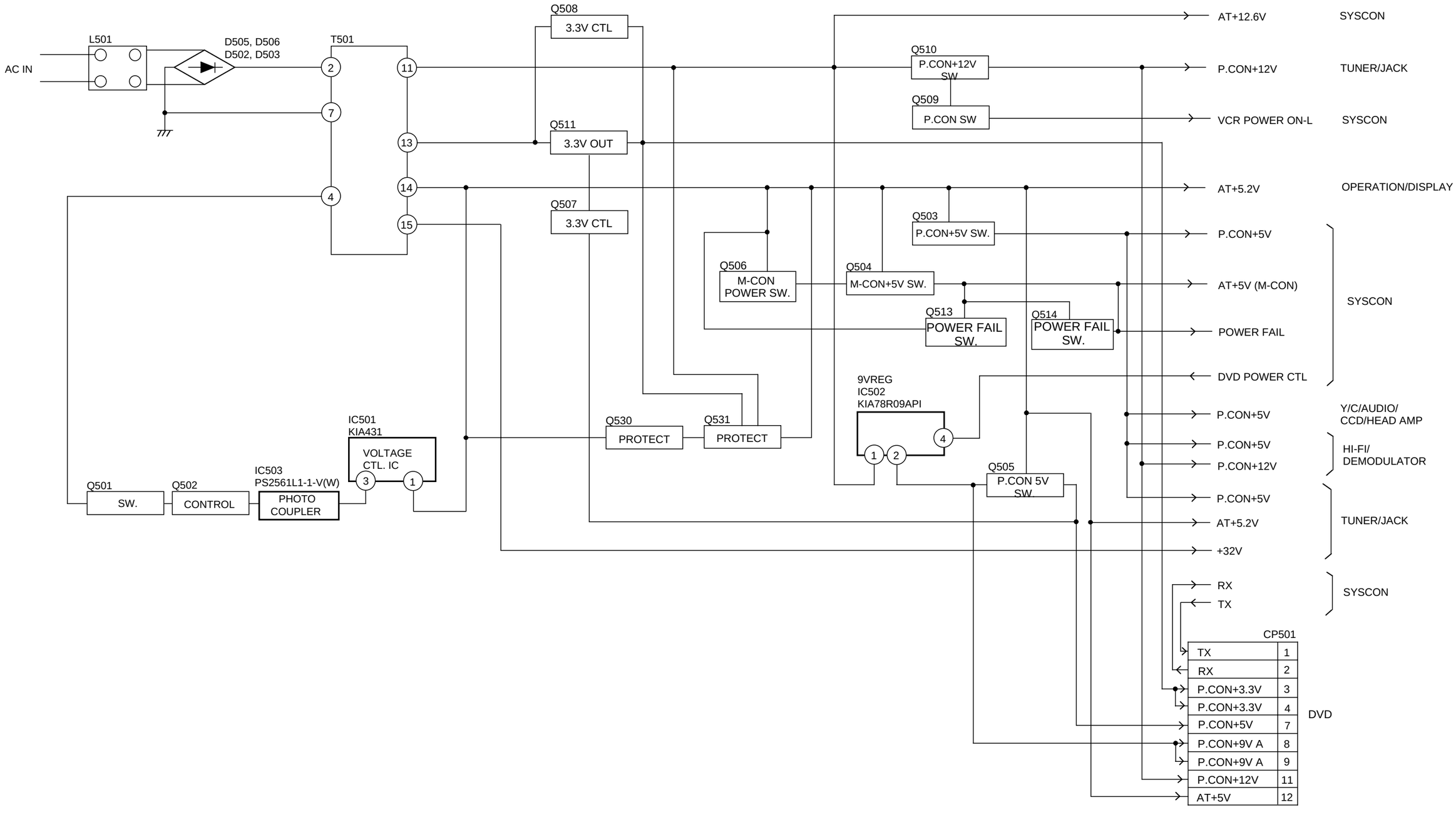
Hi-Fi/DEMODULATOR BLOCK DIAGRAM



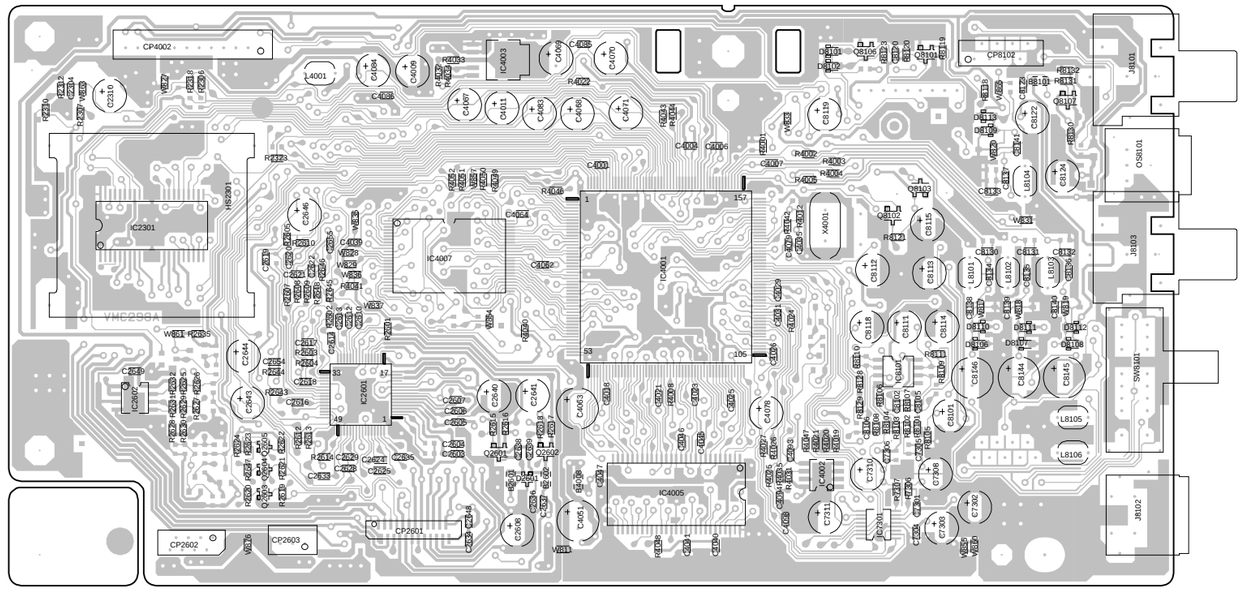
TUNER/JACK BLOCK DIAGRAM



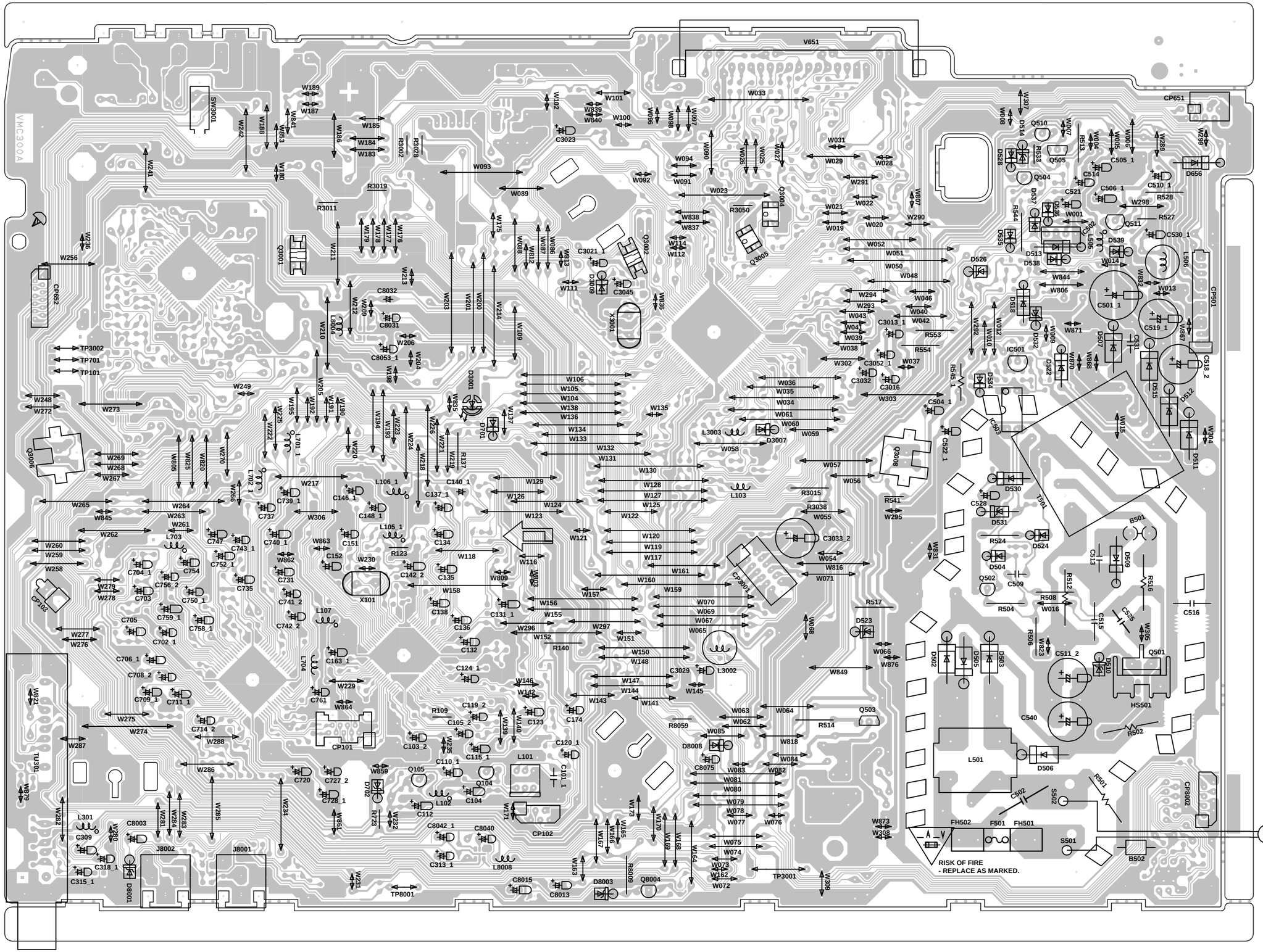
POWER BLOCK DIAGRAM



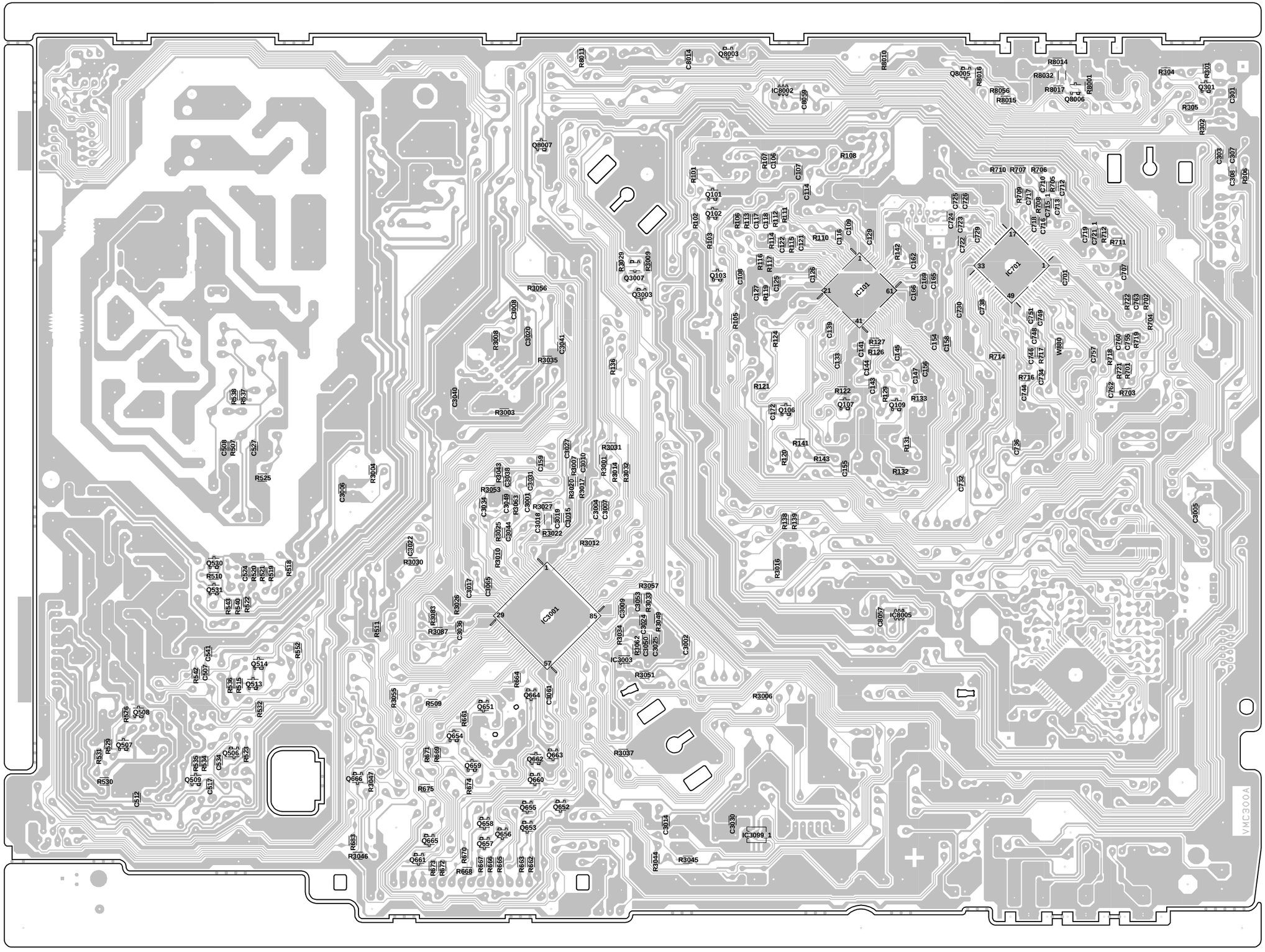
PRINTED CIRCUIT BOARDS
DVD (TOP SIDE)



PRINTED CIRCUIT BOARDS
VCR (INSERTED PARTS)
SOLDER SIDE

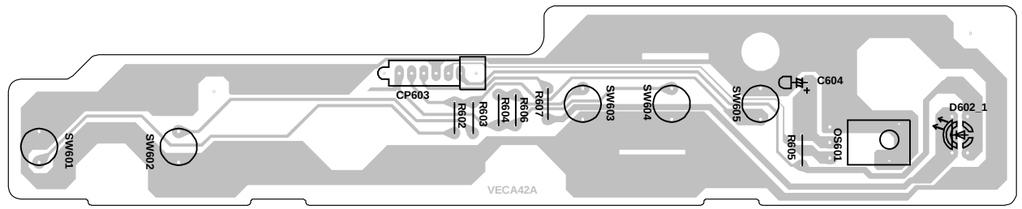


PRINTED CIRCUIT BOARDS
VCR (CHIP MOUNTED PARTS)
SOLDER SIDE

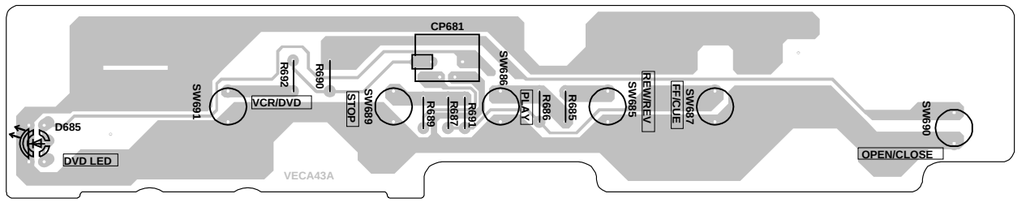


PRINTED CIRCUIT BOARDS

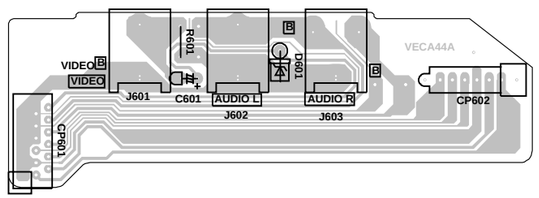
OPERATION 1
SOLDER SIDE



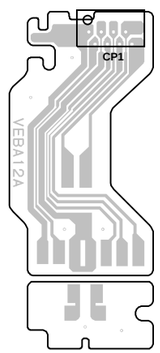
OPERATION 2
SOLDER SIDE



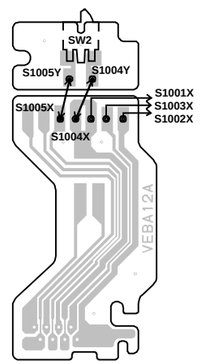
FRONT JACK
SOLDER SIDE



RELAY/SW (INSERTED PARS)
SOLDER SIDE



RELAY/SW (CHIP MOUNTED PARS)
SOLDER SIDE



MPEG/MICON SCHEMATIC DIAGRAM

(DVD PCB)

MPEG/MICON IC
IC4001
ZR36762

FROM/TO MEMORY

FROM/TO AUDIO/VIDEO

FROM/TO RF AMP/DSP

FROM/TO POWER

REG+1.8V IC
IC4003
PQ070XZ01ZP

EEPROM IC
IC4002
AT24C04N-10SI-2.7

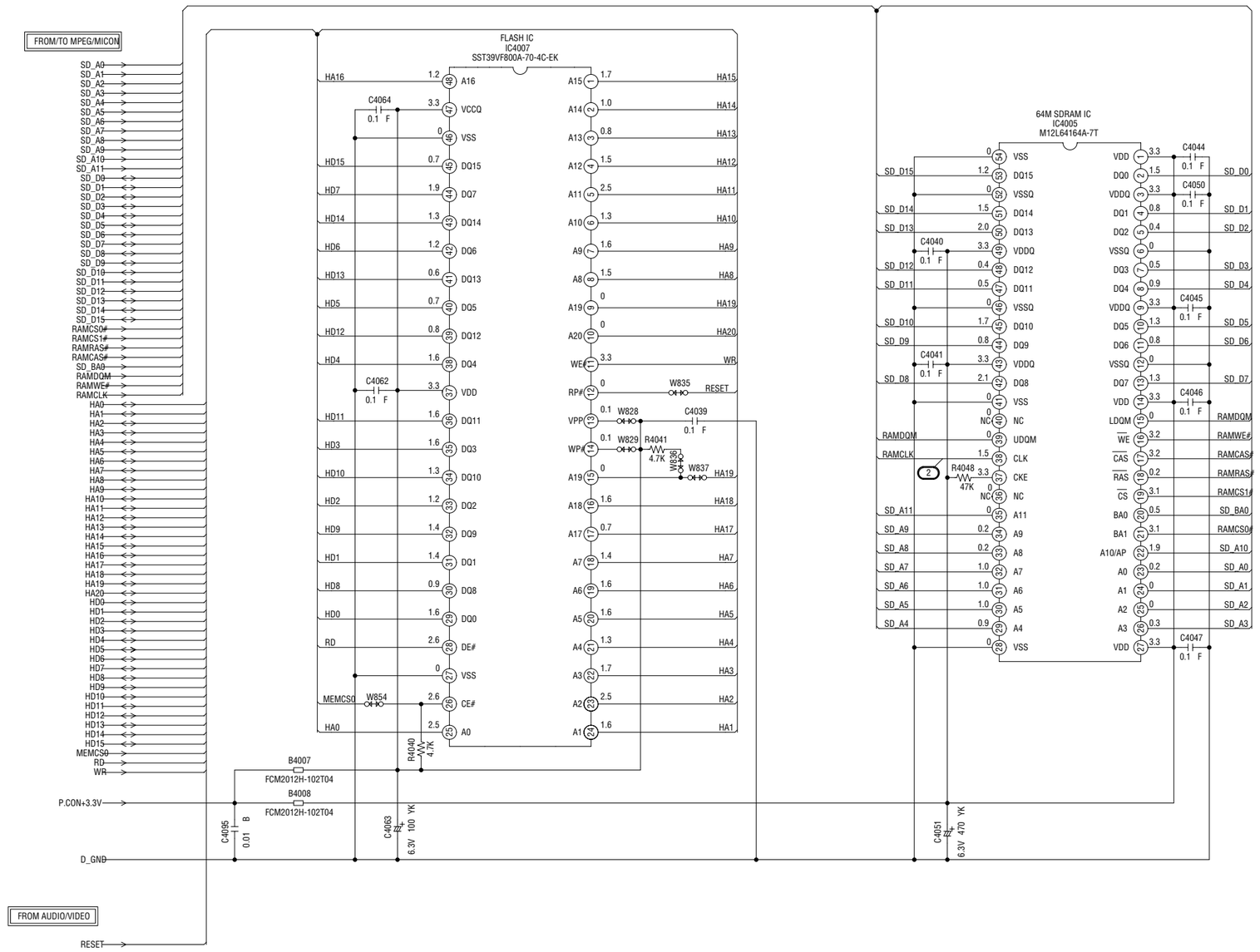
CP4002 (CP501)
A2001WV2-12P

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

DIGITAL AUDIO SIGNAL(PB)

MEMORY SCHEMATIC DIAGRAM
(DVD PCB)



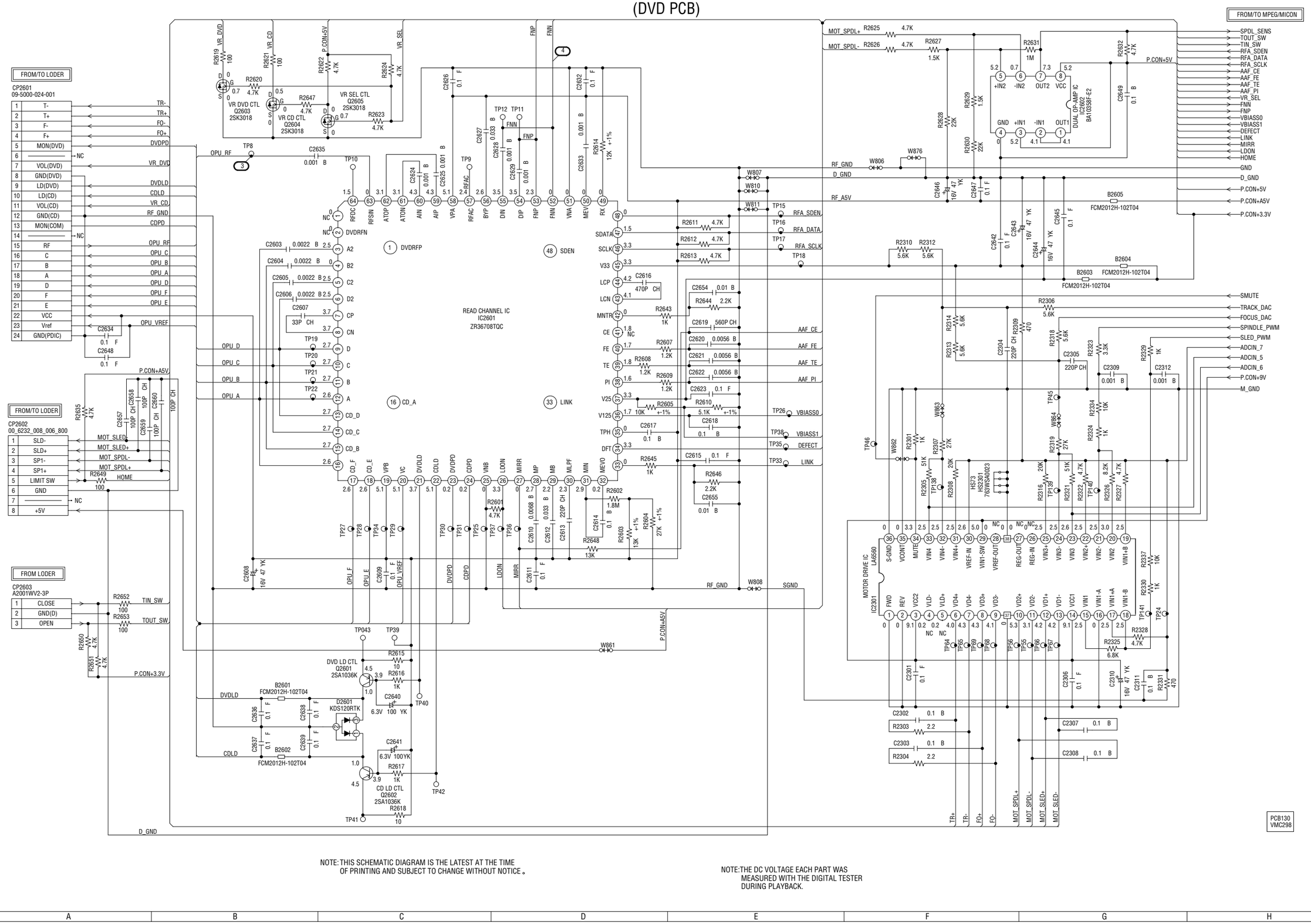
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

PCB130
VMC298

RF AMP/DSP SCHEMATIC DIAGRAM

(DVD PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

AUDIO/VIDEO SCHEMATIC DIAGRAM

(DVD PCB)

FROM/TO MPEG/MICON

P.CON+A5V
DAC_VIDEO_A
DAC_VIDEO_C
DAC_VIDEO_B
DAC_VIDEO_D
P.CON+5V
P.CON+3.3V
DVD_AUDIO_L
DVD_AUDIO_R
AT+5V
P.CON+12V
V_SW
RESET
MC
MD
ML
AMCLK
ABCLK
ALRCLK
ASDATA0
SPDIF
GND
D_GND

OPTICAL OS8101 OFTG038101 (1 INPUT, 2 VCC, 3 GND)

B8101 FCM2012H-102T04
B8102 FCM2012H-102T04
B8103 FCM2012H-102T04

DVD AUDIO OUT J8101 MSP-213V1-732_NI_LF

D AUDIO DRIVER Q8107 KTC3875S_Y_RTK

DAC_VIDEO_A C8134 12P CH L8101 1uH 0305
DAC_VIDEO_C C8135 12P CH L8102 1uH 0305
DAC_VIDEO_B C8136 12P CH L8103 1uH 0305
DAC_VIDEO_D C8137 12P CH L8104 1uH 0305

DAC_D_DVD_VIDEO
DAC_C(B)U_VIDEO
DAC_B(R)V_VIDEO

Y/C SEPA J8102 MDC-070V

YUV OUT J8103 MSP-213V1-652_NI_LF

S/CVBS ⇔ COMP
VIDEO OUT SW SW8101 SK42H01G9A

TO MEMORY

STERED DAC IC IC7301 PCM1742KE/2K

AUDIO_AMP IC IC8101 NJM4580M(TE1)

L_AUDIO
R_AUDIO
A_GND
VCC

MUTE SW Q8106 KRC104SRTK
MUTE SW. Q8103 KRA101SRTK
MUTE SW Q8105 KTC3875S_Y_RTK
MUTE SW. Q8102 KRC103SRTK
MUTE DET Q8101 KTC3875S_Y_RTK
MUTE SW Q8104 KTC3875S_Y_RTK

ZERO
SYS_MUTE
DVD_AUDIO_R
DVD_AUDIO_L

TO TUNER/JACK
(CP8002) CP8102 IMSA-9604S-08C

DVD_AUDIO_R	8
GND	7
DVD_AUDIO_L	6
GND	5
DAC_D_DVD_VIDEO	4
SYS_MUTE	3
DVD_RESET	2
NC	1

1.25m FFC CD8002 2F080601

PCB130 VMC298

◁ PLAYBACK COLOR SIGNAL
◀ PLAYBACK LUMINANCE SIGNAL
◁◁ PLAYBACK VIDEO SIGNAL
◀ AUDIO SIGNAL(PB)
◀ DIGITAL AUDIO SIGNAL(PB)
◀ R.SIGNAL+ COMPONENT SIGNAL(U)
≪ B.SIGNAL+ COMPONENT SIGNAL(V)

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

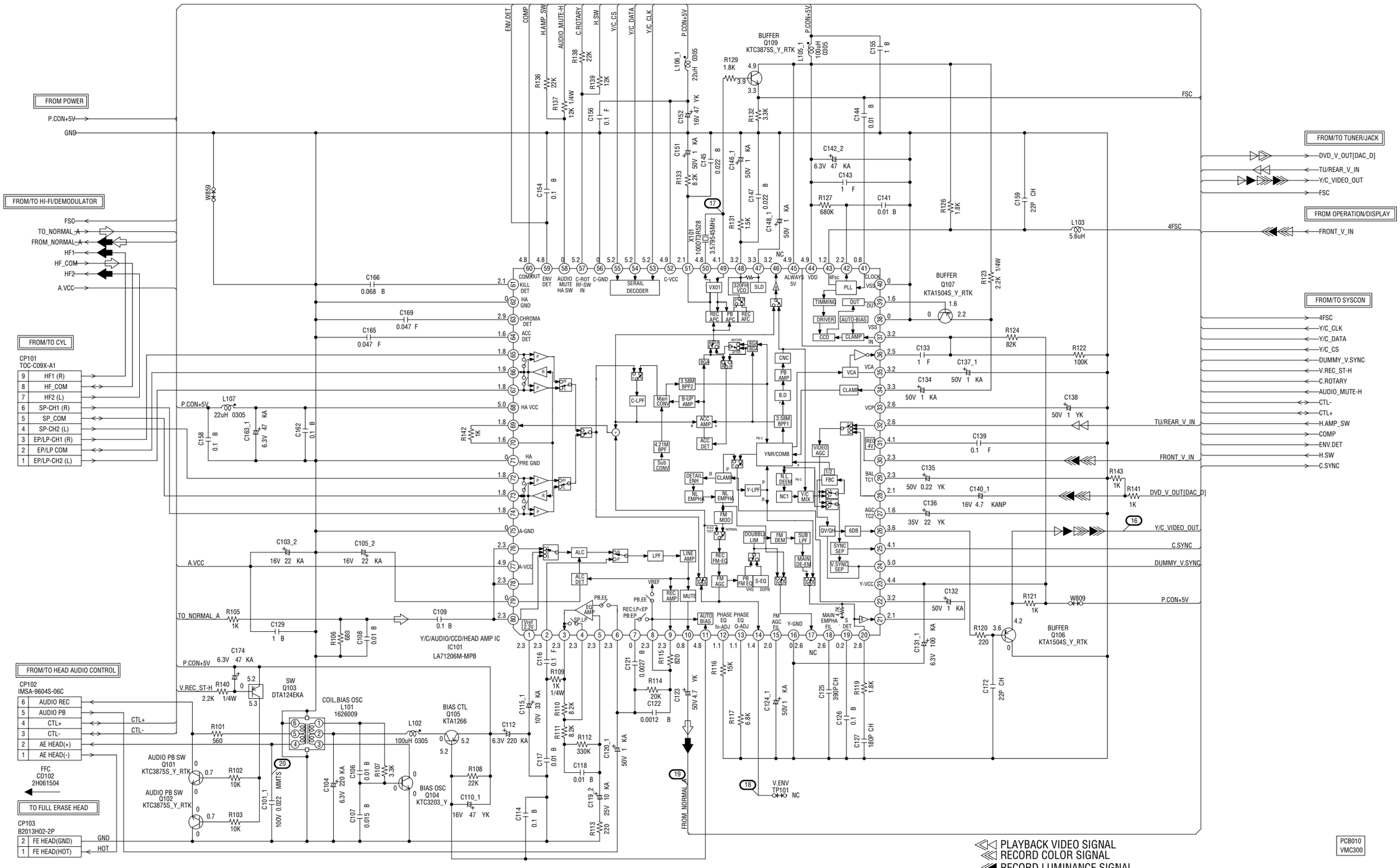
NOTE: THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR

CAUTION: DIGITAL TRANSISTOR

Y/C/AUDIO/CCD/HEAD AMP SCHEMATIC DIAGRAM

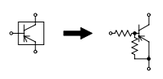
(VCR PCB)



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

CAUTION: DIGITAL TRANSISTOR



PLAYBACK VIDEO SIGNAL
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL
AUDIO SIGNAL(REC)
AUDIO SIGNAL(PB)
PLAYBACK COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
TUNER VIDEO SIGNAL

SYSCON SCHEMATIC DIAGRAM
(VCR PCB)

FROM/TO POWER
TX
RX
DVD_POWER_CTL
AT+12.6_V
P.CON+5V
AT+5V[M-CON]
VCR_POWER_ON-L
POWER_FAIL
AT+5.2V
GND
MOTOR_GND

FROM/TO DECK
CP3001
TMC-J12P-B2
1 CAP FG
2 CAP VCO
3 VCC
4 CAP.M/F/R
5 I LIMIT
6 MOTOR GND
7 GND
8 LD/CY VCO
9 CAP CTL
10 LDM CTL
11 CYL FG/PG
12 CYL CTL

SYSCON/TIMER/SERVO IC
IC3001
OEC0138B

FROM/TO Y/C/AUDIO/CCD/HEAD AMP
DUMMY_V.SYNC
C.SYNC
V.REC_ST-H
C.ROTARY
AUDIO_MUTE-H
CTL-
CTL+
H.AMP_SW
COMP
ENV.DET
H.SW
Y/C_CS
Y/C_DATA
Y/C_CLK
4FSC

FROM/TO TUNER/JACK
RF_CH_SW
SW_V_OUT
AV_SW1
AV_SW2
SCL
SDA
AFT-S.CURVE
TV/VCR
VIDEO_OUT
POWER_MUTE-L
VIDEO_MUTE-H
DVD_RESET
SYS_MUTE

FROM/TO HI-FI/DEMODULATOR
V.REC_ST-H
HIFI_ENV.DET
HIFI_H.SW
AUDIO_MUTE-H
SCL
SDA
ST_SELECT

FROM/TO OPERATION/DISPLAY
DVD_LED
VCR_LED
KEY-A
KEY-B
REM_IN
1G/VCR/T-REC_LED
2G/DUB/REC_LED
3G/TV/VCR_LED
4G/VSC_LED
5G/CS/BS_LED
SEG_1
SEG_2
SEG_3
SEG_4
SEG_5
SEG_6
SEG_7
SEG_8
SEG_9
SEG_10

JG3002 JG3003 JG3004 JG3005 JG3006 JG3007 JG3008
TX
MD0
RESET
FWE
AT+5V[M-CON]

PCB010
VMC300

CAUTION: DIGITAL TRANSISTOR
CAUTION: DIGITAL TRANSISTOR

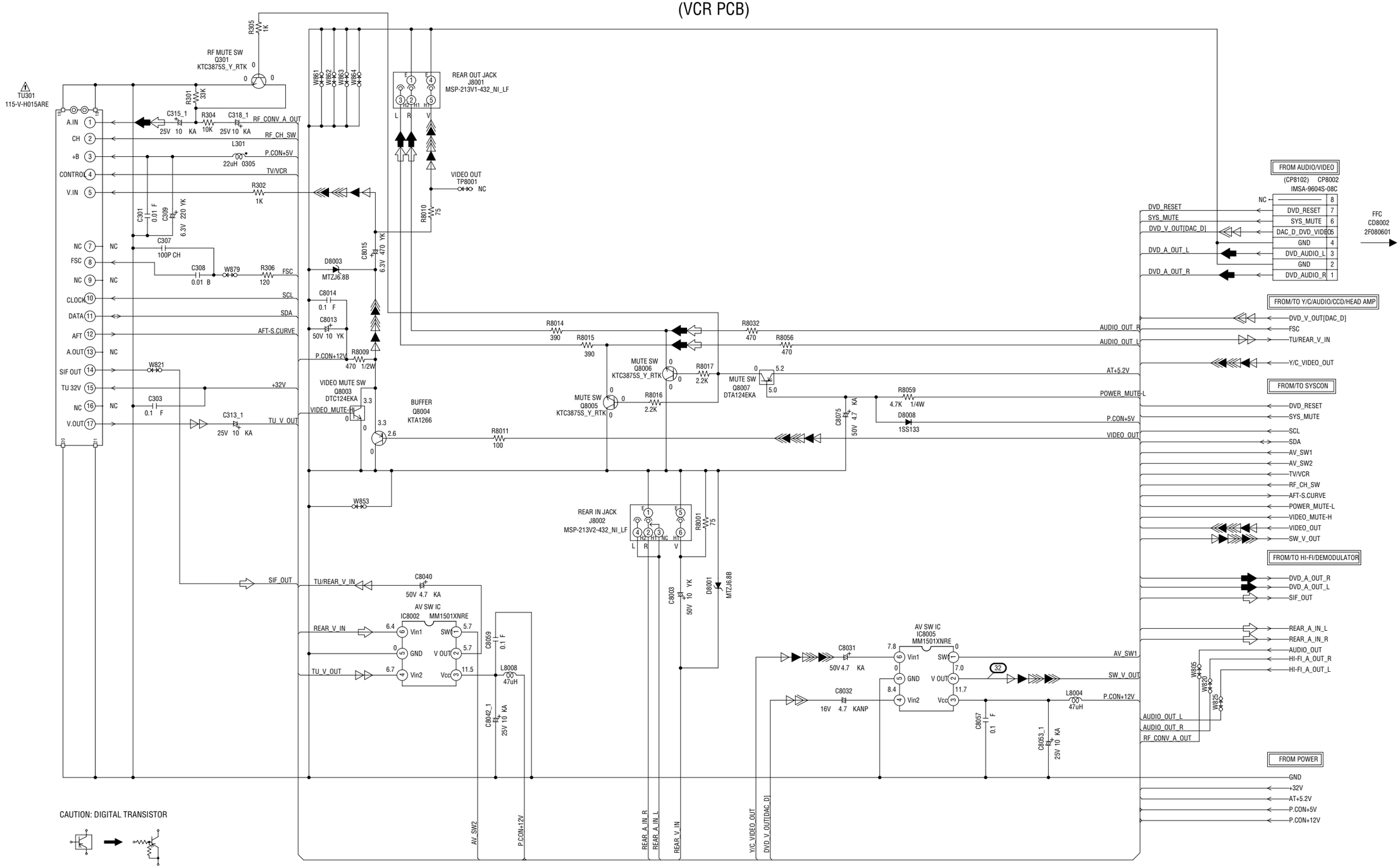
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

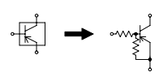
RECORD LUMINANCE SIGNAL
RECORD COLOR SIGNAL
PLAYBACK LUMINANCE SIGNAL
PLAYBACK COLOR SIGNAL

TUNER/JACK SCHEMATIC DIAGRAM

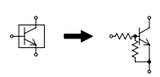
(VCR PCB)



CAUTION: DIGITAL TRANSISTOR



CAUTION: DIGITAL TRANSISTOR



NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

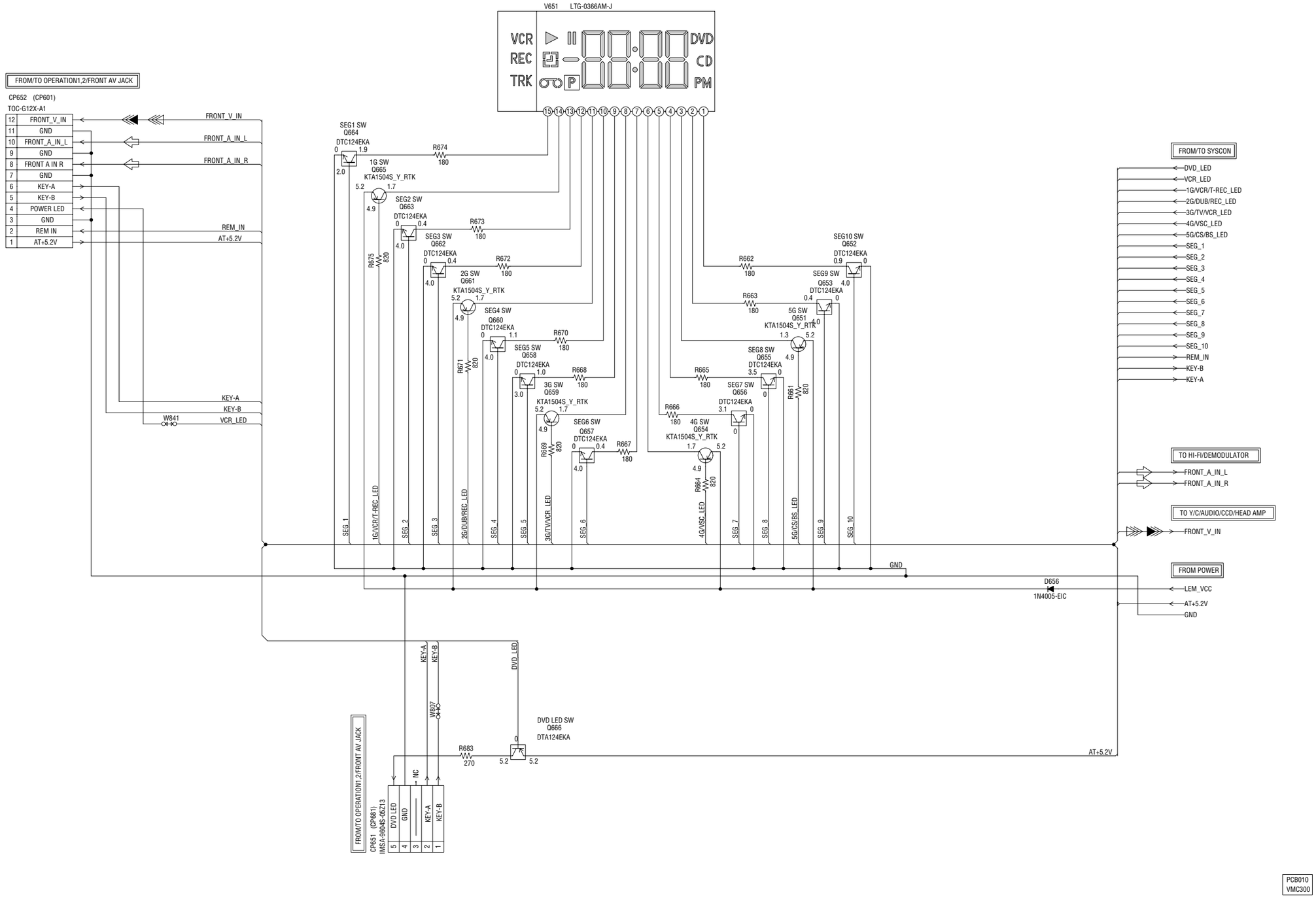
CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY.USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

- PLAYBACK VIDEO SIGNAL
- TUNER VIDEO SIGNAL
- PLAYBACK LUMINANCE SIGNAL
- PLAYBACK COLOR SIGNAL
- RECORD COLOR SIGNAL
- RECORD LUMINANCE SIGNAL
- AUDIO SIGNAL(REC)
- AUDIO SIGNAL(PB)

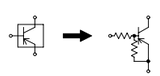
PCB010
VMC300

OPERATION/DISPLAY SCHEMATIC DIAGRAM
(VCR PCB)

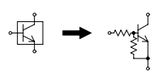


AUDIO SIGNAL(REC)
RECORD COLOR SIGNAL
RECORD LUMINANCE SIGNAL

CAUTION: DIGITAL TRANSISTOR



CAUTION: DIGITAL TRANSISTOR

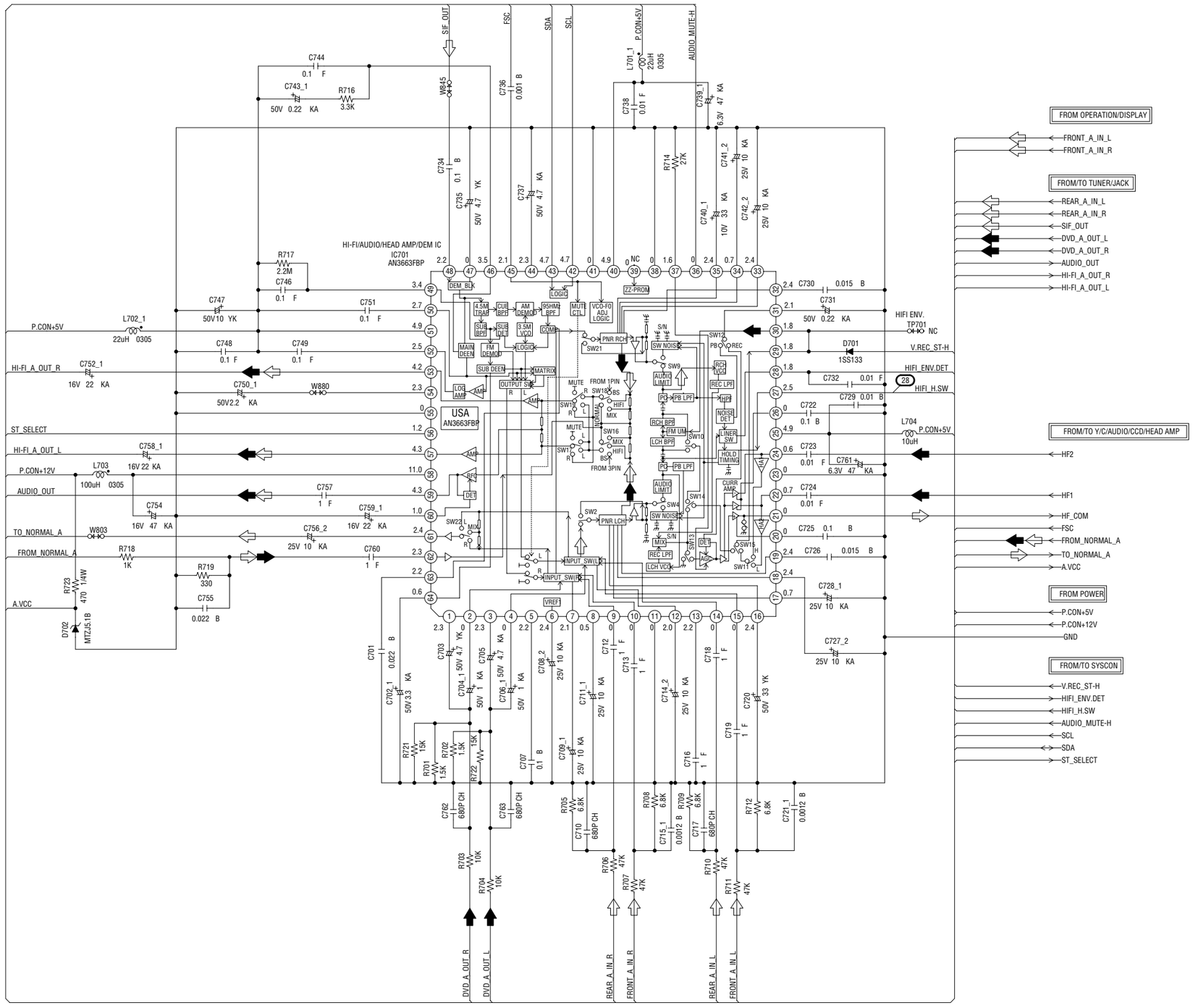


NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

Hi-Fi/DEMODULATOR SCHEMATIC DIAGRAM

(VCR PCB)



NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

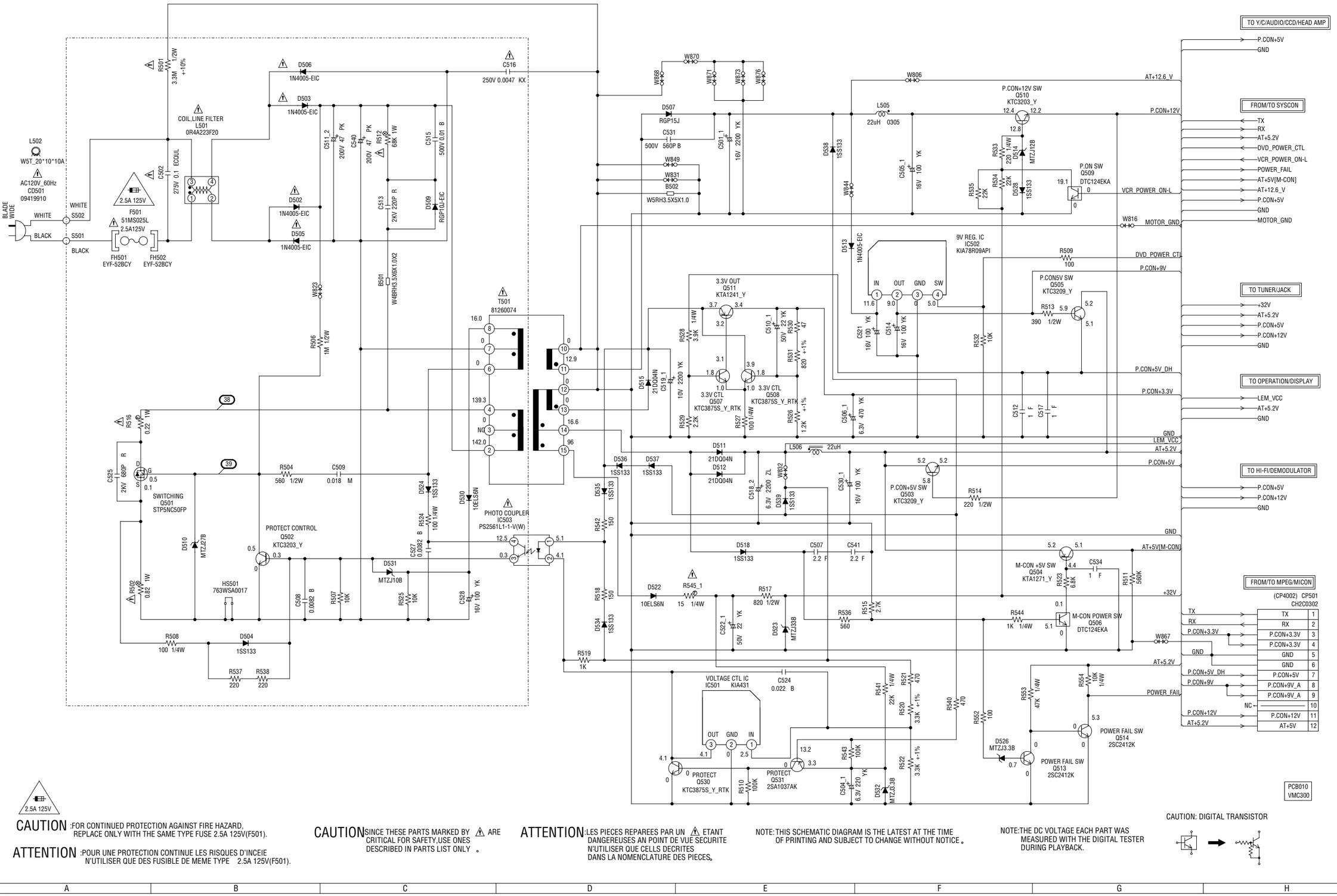
NOTE: THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE。

AUDIO SIGNAL(REC)

AUDIO SIGNAL(PB)

POWER SCHEMATIC DIAGRAM

(VCR PCB)



CAUTION :FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH THE SAME TYPE FUSE 2.5A 125V(F501).

ATTENTION :POUR UNE PROTECTION CONTINUE LES RISQUES D'INCEIE N'UTILISER QUE DES FUSIBLE DE MEME TYPE 2.5A 125V(F501).

CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION :LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

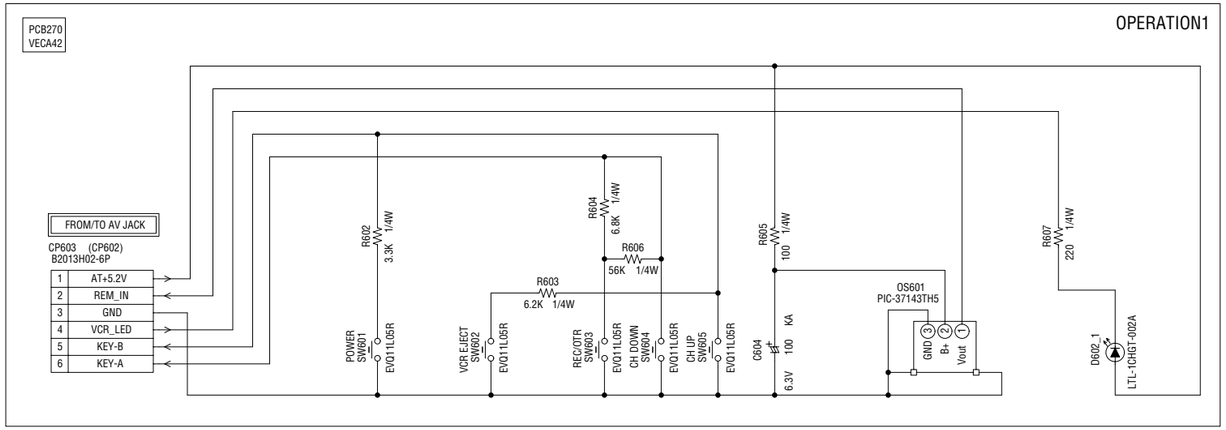
NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

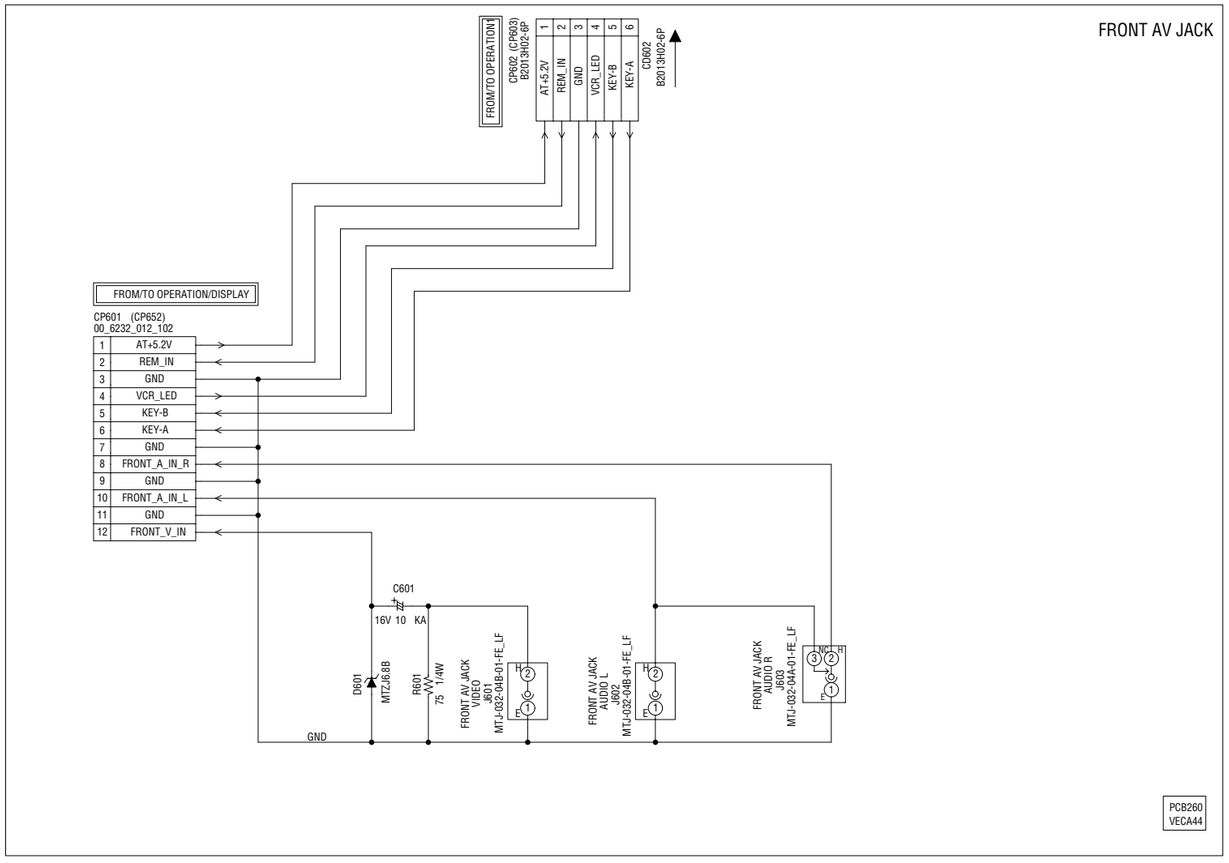
CAUTION: DIGITAL TRANSISTOR

OPERATION1,2/FRONT AV JACK SCHEMATIC DIAGRAM

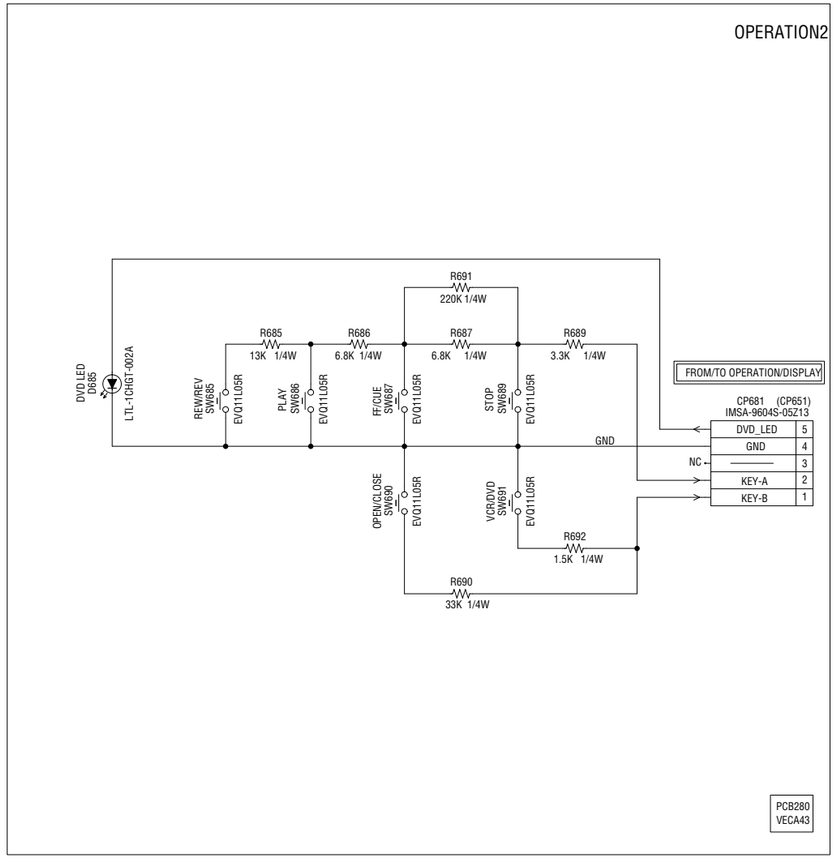
(OPERATION 1 PCB)



(FRONT JACK PCB)



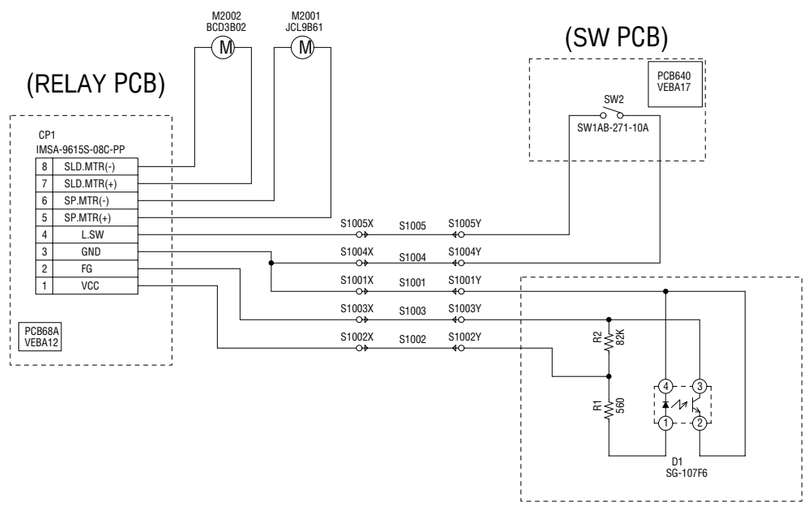
(OPERATION 2 PCB)



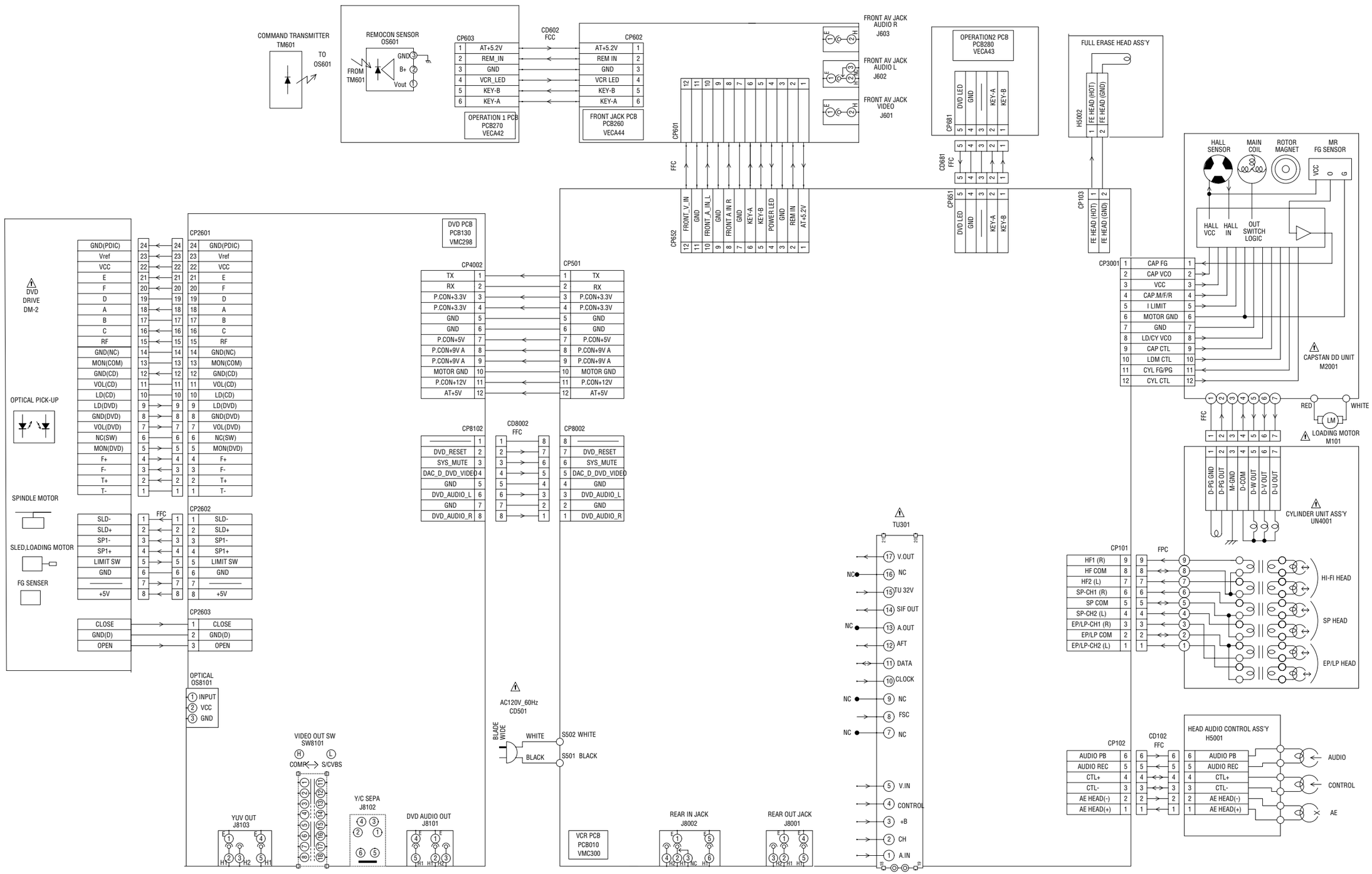
NOTE:THE DC VOLTAGE EACH PART WAS MEASURED WITH THE DIGITAL TESTER DURING PLAYBACK.

NOTE:THIS SCHEMATIC DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

SW/RELAY/FG SCHEMATIC DIAGRAM



INTERCONNECTION DIAGRAM



CAUTION SINCE THESE PARTS MARKED BY ⚠ ARE CRITICAL FOR SAFETY,USE ONES DESCRIBED IN PARTS LIST ONLY 。

ATTENTION :LES PIECES REPAREES PAR UN ⚠ ETANT DANGEREUSES AN POINT DE VUE SECURITE N'UTILISER QUE CELLS DECRITES DANS LA NOMENCLATURE DES PIECES。

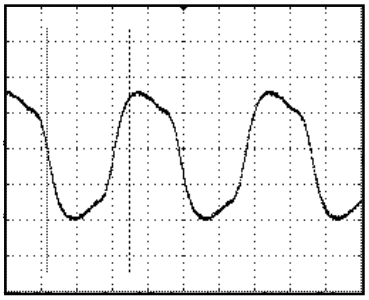
NOTE: THIS INTERCONNECTION DIAGRAM IS THE LATEST AT THE TIME OF PRINTING AND SUBJECT TO CHANGE WITHOUT NOTICE 。

WAVEFORMS

MPEG/MICON

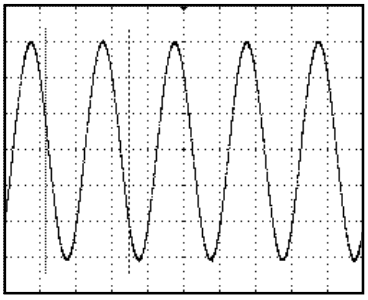
10ns
100mV

①



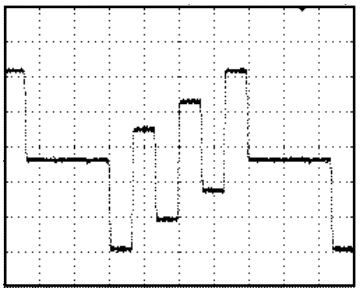
500µs
100mV

⑥



10µs
100mV

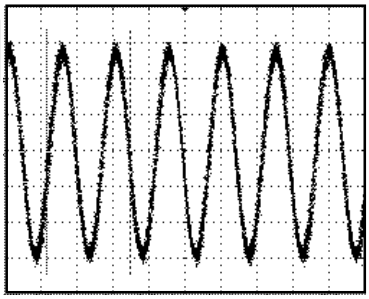
⑪



MEMORY

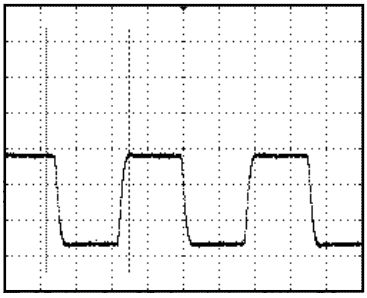
5ns
20mV

②



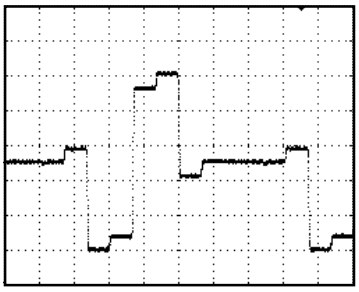
200ns
20mV

⑦



10µs
100mV

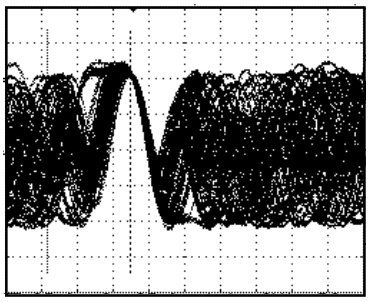
⑫



RF AMP/DSP

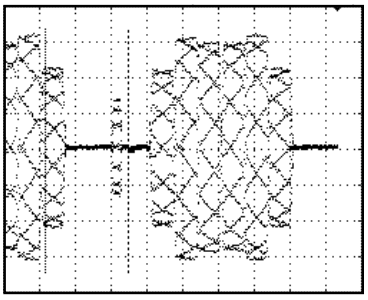
200ns
20mV

③



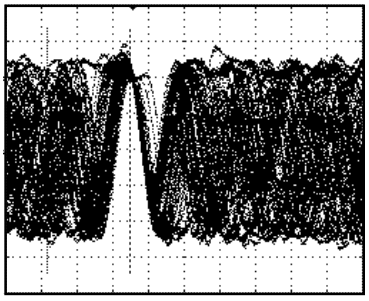
10µs
100mV

⑧



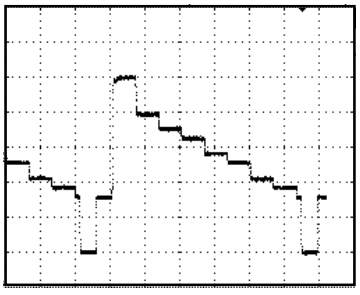
200ns
10mV

④



10µs
100mV

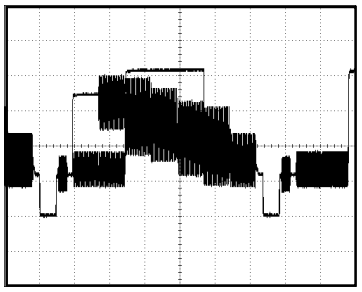
⑨



Y/C/AUDIO/CCD/HEAD AMP

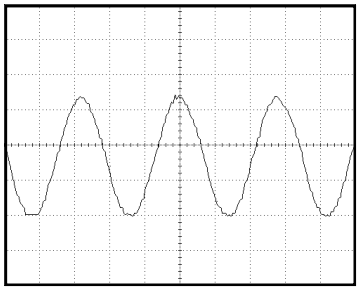
PB
10µs
500mV

⑯



PB
100ns
100mV

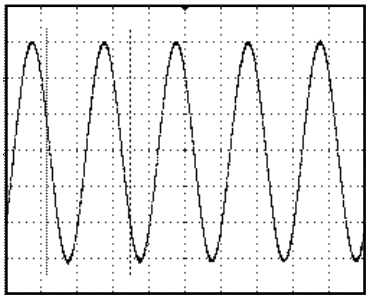
⑰



AUDIO/VIDEO

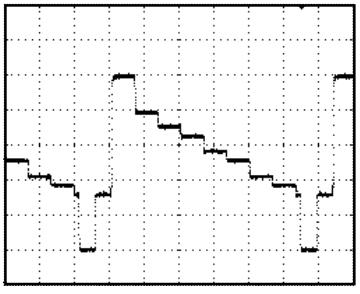
500µs
100mV

⑤



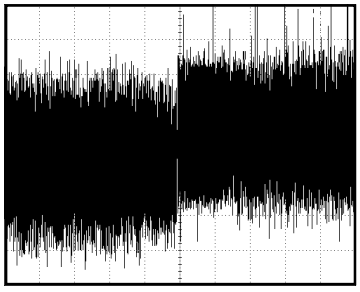
10µs
100mV

⑩



PB
1ms
100mV

⑱



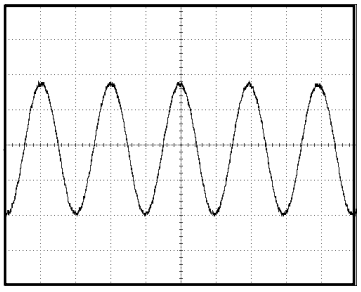
NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

WAVEFORMS

POWER

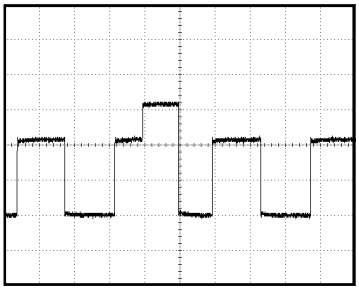
PB
200ms
500mV

⑲



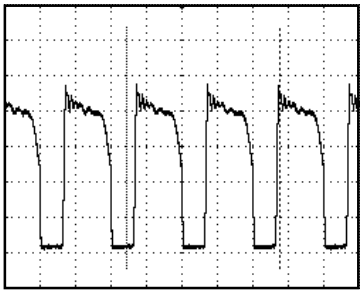
PB
500µs
1.0V

㉔



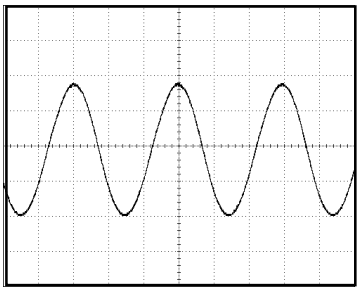
5µs
500mV

㊳



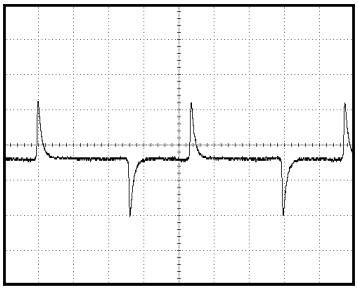
REC
5µs
20V

⑳



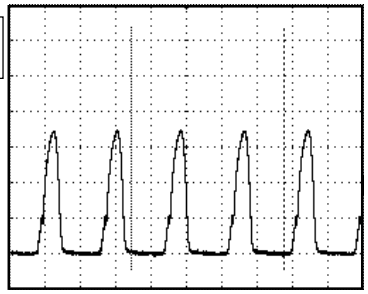
PB
5ms
500mV

㉕



5µs
5.0V

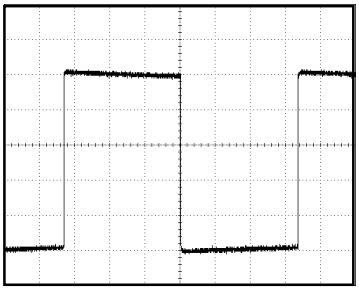
㊴



SYSCON

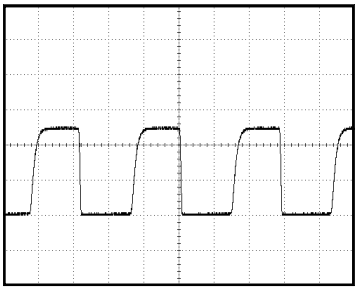
PB
5ms
1.0V

㉑



PB
5ms
2.0V

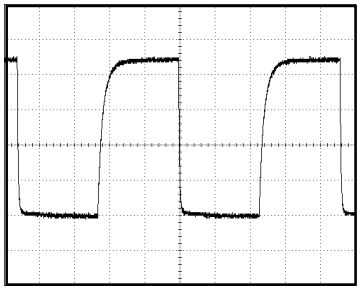
㉗



Hi-Fi/DEMODULATOR

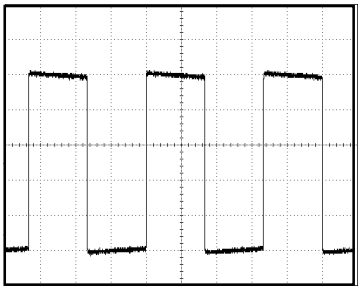
PB
200µs
1.0V

㉒



PB
10ms
1.0V

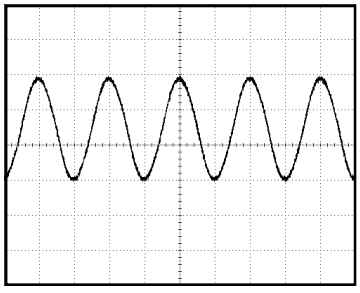
㉘



TUNER/JACK

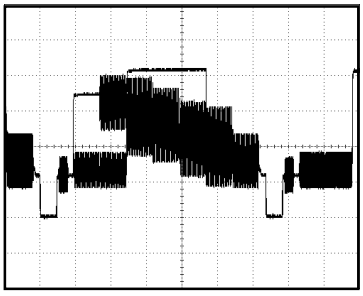
POWER ON
50ns
1.0V

㉓



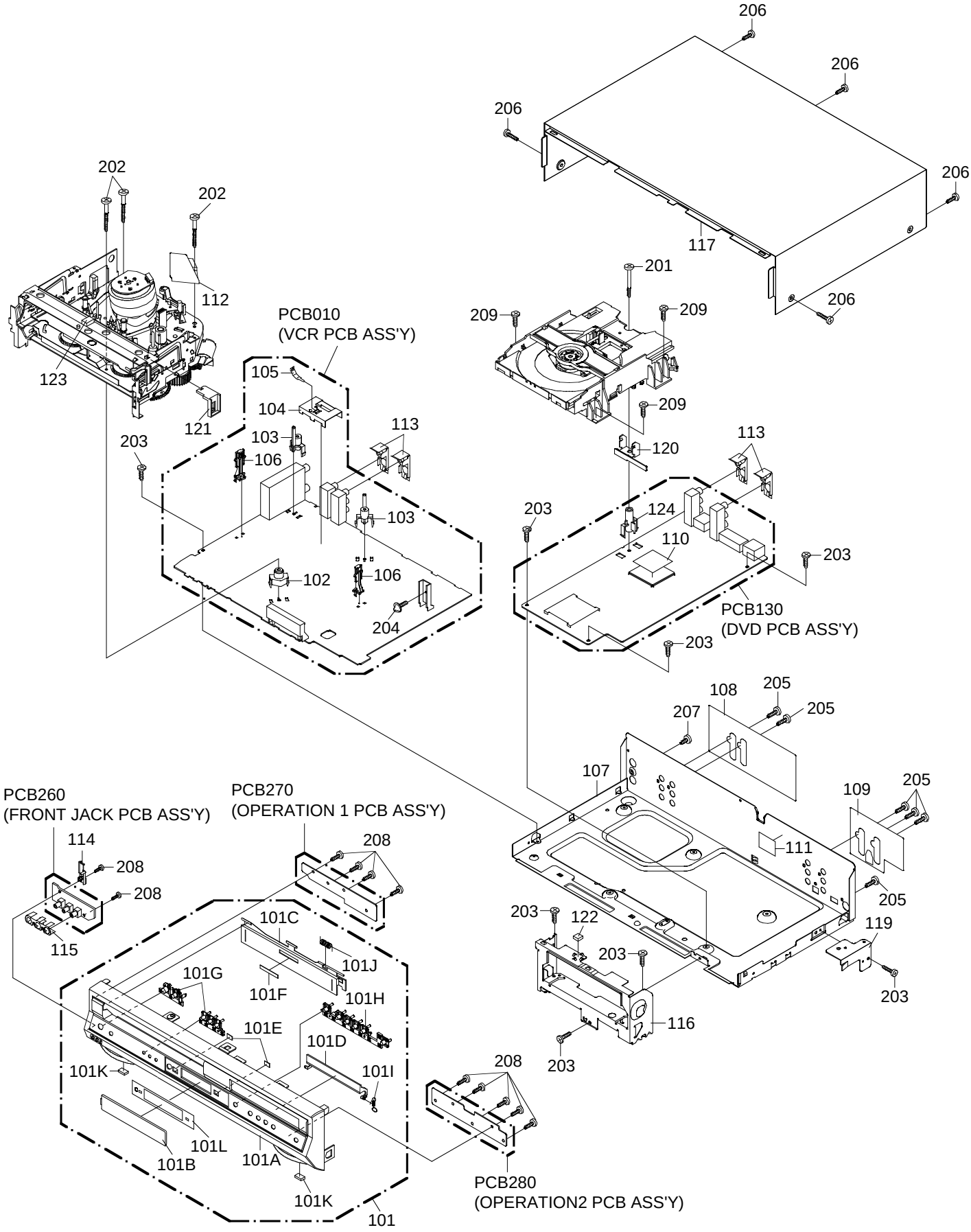
10µs
200mV

㉜

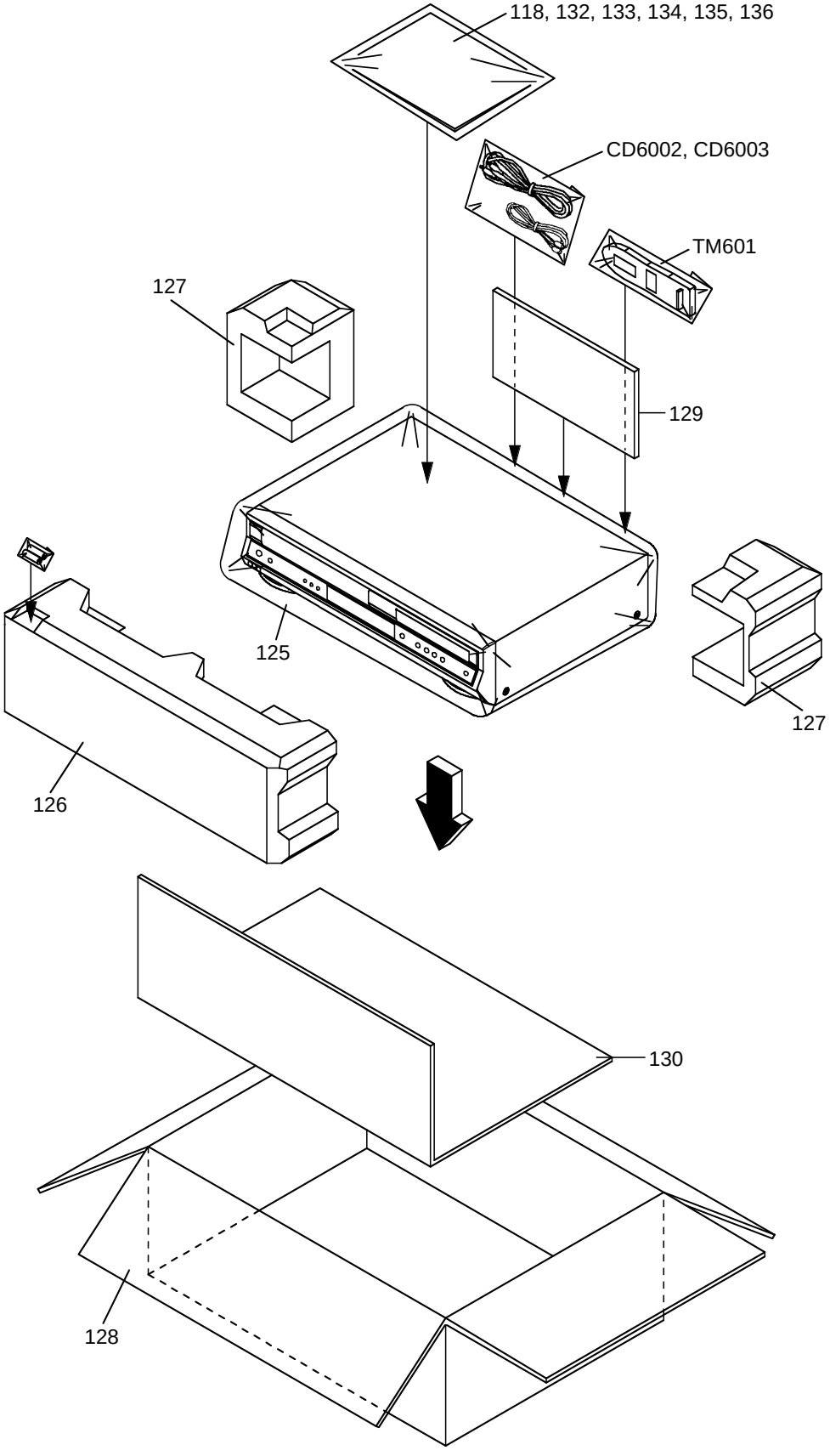


NOTE: The following waveforms were measured at the point of the corresponding balloon number in the schematic diagram.

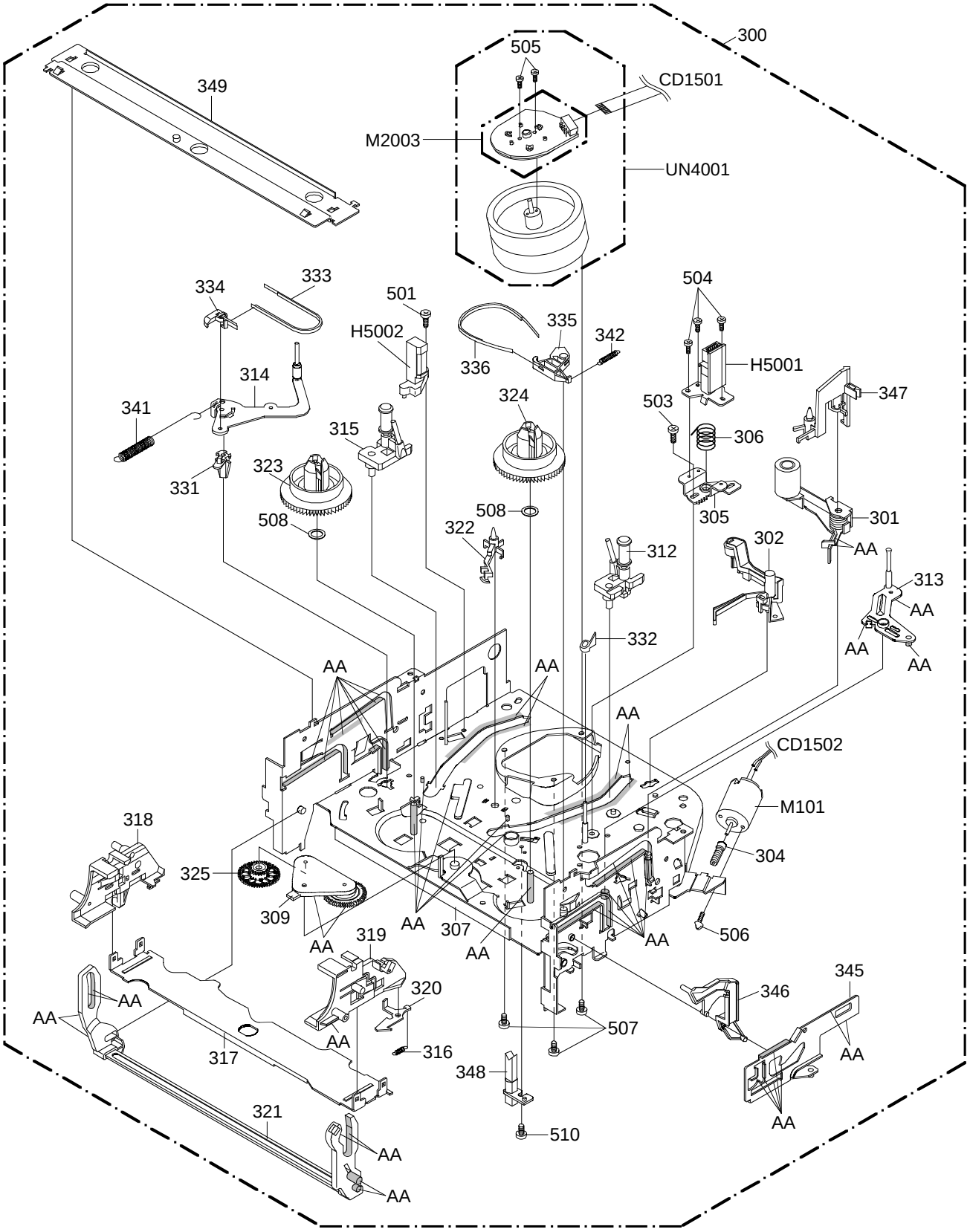
MECHANICAL EXPLODED VIEW



MECHANICAL EXPLODED VIEW
(PACKING DIAGRAM)



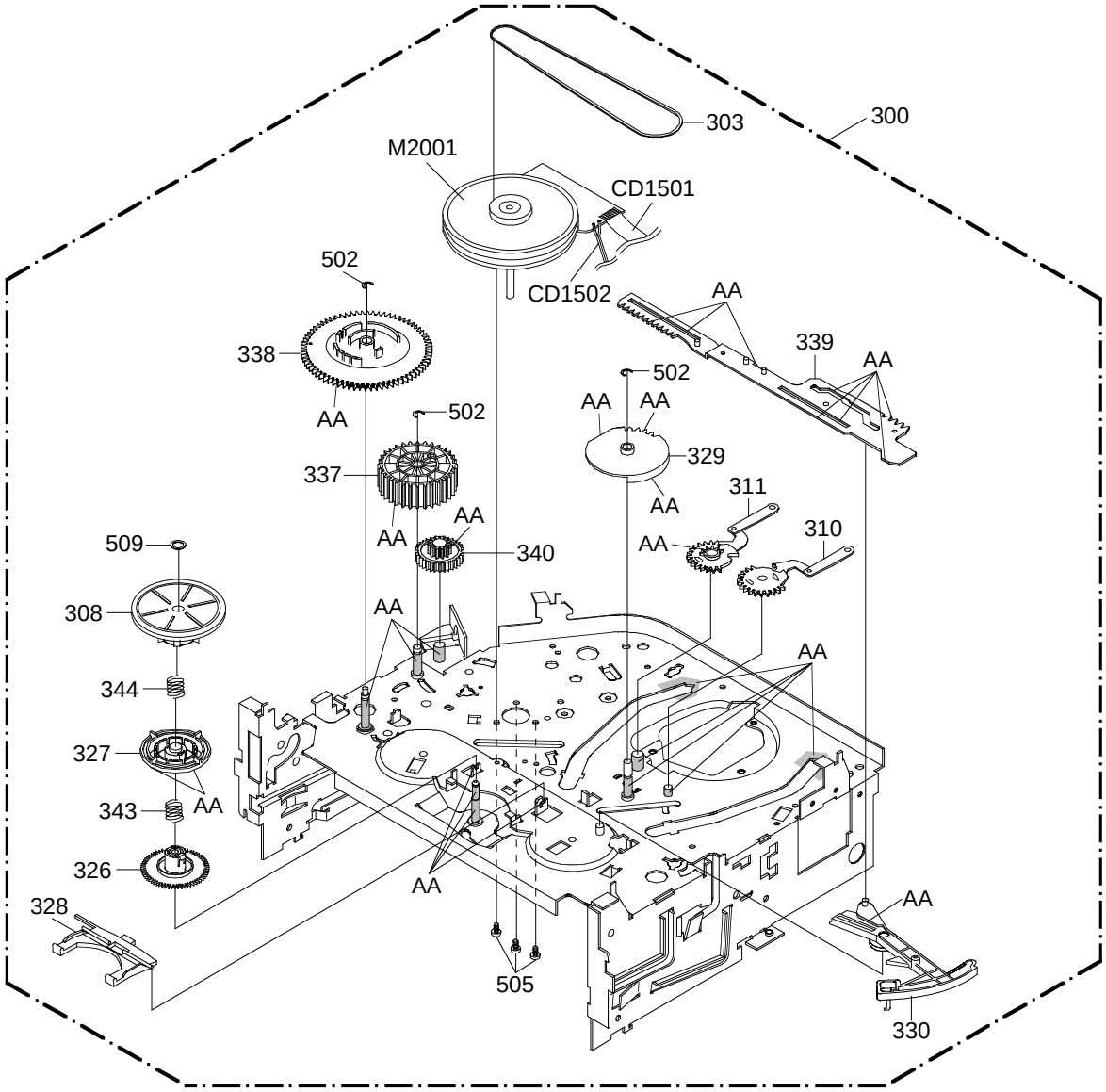
CHASSIS EXPLODED VIEW (TOP VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

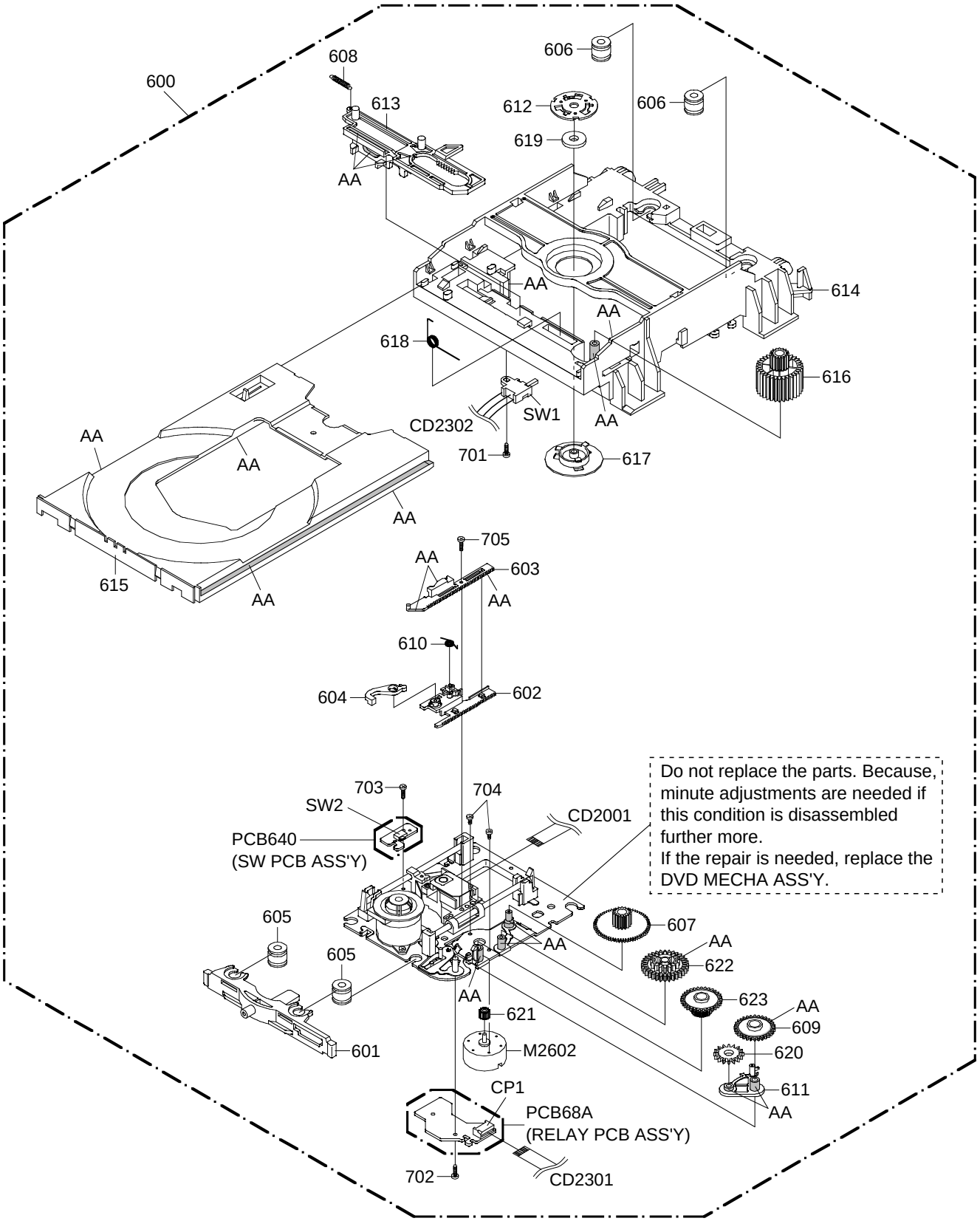
CHASSIS EXPLODED VIEW (BOTTOM VIEW)



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

DVD DECK EXPLODED VIEW



CLASS	MARK
GREASE	AA

NOTE: Applying positions AA for the grease are displayed for this section.
Check if the correct grease is applied for each position.

MECHANICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
101	AE002737	A2C533X720	CABINET,FRONT ASSY	
101A	AE002738	701WPJC500	CABINET,FRONT	
101B	AE002739	711WPDA644	PLATE,DISPLAY	
101C	AE002740	712WPBA081	FLAP,VCR	
101D	AE002741	712WPJB967	FLAP,DVD	
101E	AE001167	7230007689	SHEET,LED	
101F	AE001847	7235490018	BADGE,BRAND	
101G	AE002742	736WPJA007	BUTTON,FRAME-VCR	
101H	AE002743	736WPJA008	BUTTON,FRAME-DVD	
101I	AE001324	742WKA0001	SPRING,DVD-FLAP	
101J	AE001848	743WKA0042	SPRING,FLAP	
101K	AD301567	800WFA0051	CUSHION,LEG	
101L	AE002744	800WQ00084	DOUBLE FACE TAPE	
102	BZ710577	701WPA0686	HOLDER,DECK	
103	BZ710658	701WPA0751	HOLDER,DECK	
104	BZ710466	752WSA0230	SHIELD,CASE HEAD AMP	
105	BZ710331	753WUAA006	SPRING,EARTH HEAD AMP	
106	BZ710498	85OP700038	HOLDER,END SENSOR	
107	AE001160	702WSAA068	PLATE,BOTTOM	
108	AE002745	722549A303	SHEET,RATING	
109	AE001166	7230007673	SHEET,JACK	
110	AE000754	7232020748	SHEET,IC	
111	AD301688	7260000341	SHEET,CAUTION	
112	BZ710633	752WSA0275	COVER,AC HEAD	
113	BZ710659	752WSA0290	SHIELD,COMPO	
114	AE002746	761WPA0301	HOLDER,FFC	
115	AE002747	752WUA0006	SHIELD,3PIN	
116	AE001420	761WSA0127	ANGLE,FRONT	
117	AE002690	702WSAA077	CABINET,TOP	
118	AD300845	JB5UD500	POLYBAG,INSTRUCTION(RED CAUTION)	
119	AE001591	761WSA0130	ANGLE,DVD	
120	AE001418	752WSA0359	ANGLE,DVD 2	
121	AE001851	761WPA0262	HOLDER,DECK TOP	
122	AE001852	8965TS1010	CUSHION	65TS10-10H L10
123	AE001853	8965TS1017	CUSHION	65TS10-10H L17.5
124	AE001419	761WPA0292	HOLDER,DVD	
125	AD301577	791WHA0100	GIFT SHEET	
126	AE001174	792WHA0489	PACKAGE,FRONT	
127	AE002173	792WHA0515	PACKAGE,BACK	
128	AE002749	793WCDC061	GIFT BOX	
129	AE001856	795WCA0662	PAD,DVD/VR	155x250
130	AE002694	795WCAA181	PAD,L	340x480x160
131	AE002750	A2C533X975	INSTRUCTION BOOK KIT	
132	AD301582	J2A70617	REGISTRATION CARD	
133	AE002751	J2C50643A	NETFLIX CARD	
134	AE002752	J2C53301A	INSTRUCTION BOOK	
135	AE002753	J2C53307A	QUICK SET-UP SHEET(SPANISH)	
136	AE001184	J5F10129A	INFORMATION SHEET	
201	AE001178	8154730414	SCREW,TAP TITE(B)	M3x41R
202	BZ710582	8109130B94	SCREW,TAP TITE(B) R PAN	3x29
203	BZ710581	8109230704	SCREW,TAP TITE(B) R BIND	3x7
204	BZ710239	8109I30A04	SCREW,TAP TITE(B) WH7	3x10
205	BZ710678	8109230804	SCREW,TAP TITE(B) BIND	3x8
206	AD301575	8109K30601	SCREW,TAP TITE(B) BIND(3D)	3x6
207	AE001854	8107130404	SCREW,TAP TITE(S) PAN	3x4
208	AE002171	8110326A04	SCREW TAP TITE(P) FLAT	2.6x10
209	AE002618	810F130804	SEMS(F)	3x8

CHASSIS REPLACEMENT PARTS LIST

	Location No.	TSB P/N	Reference No.	Description	
	300	AE001857	A2C303N420K	DECK ASSY	A2C303N420K
	301	AE002754	85OA400240	PINCH ROLLER BLOCK (VA)	
	302	BZ710682	85OA500026	AHC ASS'Y	
	303	BZ710193	85OP200290	BELT,CAPSTAN (S)	
	304	BZ710515	85OP600581	WORM	
	305	BZ710094	85OP500083	BASE,AC HEAD	
	306	BZ710112	85OP800324	SPRING,AC HEAD	
	307	BZ710516	85OA000459	MAIN CHASSIS ASS'Y	
	308	BZ710517	85OA200089	CLUTCH ASS'Y	
	309	BZ710518	85OA200090	ARM IDLER ASS'Y	
	310	BZ710519	85OA300065	LOADING ARM S UNIT	
	311	BZ710520	85OA300066	LOADING ARM T UNIT	
	312	BZ710521	85OA400223	INCLINED BASE T UINT 3S	
	313	BZ710522	85OA400232	P5 ARM ASS'Y 2	
	314	BZ710650	85OA400235	TENSION ARM ASS'Y 2	
	315	BZ710524	85OA400231	INCLINED BASE S UNIT	
	316	AE000442	85OP800367	SPRING,LOCKER	
	317	BZ710526	85OP900736	CASS,HOLDER	
	318	BZ710527	85OP900748	CASS,SIDE L	
	319	BZ710528	85OP900749	CASS,SIDE R	
	320	BZ710529	85OP900739	LOCKER,R	
	321	BZ710530	85OA900228	LINK UNIT	
	322	BZ710531	85OP000496	POST,CASS GUIDE	
	323	BZ710532	85OP200316	REEL,S (S)	
	324	BZ710533	85OP200317	REEL,T (S)	
	325	BZ710534	85OP200308	GEAR,IDLER	
	326	BZ710535	85OP200311	GEAR,CLUTCH	
	327	BZ710536	85OP200312	GEAR,COUPLING	
	328	BZ710537	85OP200313	LEVER,CLUTCH	
	329	BZ710538	85OP300194	GEAR,MAIN LOADING	
	330	BZ710092	85OP400490	LEVER,TENSION	
	331	BZ710093	85OP400492	HOLDER,TENSION	
	332	BZ710366	85OP400520	CAP.P4	
	333	BZ710762	85OP400542	BAND,TENSION	
	334	BZ710540	85OP400533	CONNECT,TENSION	
	335	BZ710541	85OP600573	ARM,BRAKE T	
	336	BZ710763	85OP600584	BAND,BRAKE T	
	337	BZ710543	85OP600577	CAM,PINCH ROLLER	
	338	BZ710544	85OP600578	CAM,MAIN	
	339	BZ710545	85OP600579	ROD,MAIN	
	340	BZ710546	85OP600582	GEAR,JOINT	
	341	BZ710110	85OP800322	SPRING,TENSION	
	342	BZ710547	85OP800360	SPRING,BRAKE T	
	343	BZ710548	85OP800355	SPRING,COUPLING	
	344	BZ710549	85OP800356	SPRING,RING	
	345	BZ710565	85OP900750	LEVER,LINK 2	
	346	BZ710551	85OP900744	LEVER,FLAP	
	347	BZ710552	85OP900745	CASS,OPENER	
	348	BZ710106	85OP700035	REFLECTOR,LED	
	349	BZ710514	85OP900746	BRACKET,TOP 3V	
	501	BZ710049	8107226804	SCREW,TAP TITE(S) BIND	2.6x8
	502	BZ710058	83ETW30000	E-RING	3.0
	503	BZ710371	8107226404	SCREW,TAP TITE(S) BIND	2.6x4
	504	BZ710046	8102120604	SCREW,PAN	M2x6
	505	BZ710050	8109126604	SCREW,TAP TITE(B) PAN	2.6x6
	506	BZ710553	810A130404	SCREW/WASHER(A)	M3x4
	507	BZ710219	810A126504	SCREW/WASHER(A)	M2.6x5
	508	BZ710056	82Q264713N	POLYSLIDER WASHER	2.6x4.7xT0.13
	509	BZ710054	82P184505N	POLYSLIDER WASHER(CUT)	1.8x4.5xT0.5
	510	BZ710017	8107226604	SCREW,TAP TITE(S) BIND	2.6x6
	CD1501	BZ614292	122H071704	CORD JUMPER	2H071704
	CD1502	BZ614339	122Y021902	CORD JUMPER	2Y021902
	H5001	AD301675	1523Q91003	HEAD (AUDIO CONTROL)	VTR-1X2RPE22-756
	H5002	AD301676	1543Q02014	HEAD (FULL ERASE)	VTR-1X2ERS11-154
⚠	M101	BZ710566	1596P98001	MOTOR (LOADING)	MXN13FB12K3
⚠	M2001	AE002696	1510S98040	CAPSTAN DD UNIT	F2QVB33B
	M2003	BZ710657	1589S11017	MICRO MOTOR	I2OAL05
⚠	UN4001	AD301954	A2C301N500	CYLINDER UNIT ASS'Y	A2C301N500

DVD DECK REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.	Description	
600	AE002178	A2C518X650	DVD MECHA ASSY	A2C518X650
601	AD301822	92P100022A	TRAVERSE HOLDER	
602	AE002480	92P100080A	RACK,FEED 1A	
603	AE002481	92P100081A	RACK,FEED 2A	
604	AD301825	92P100035A	LEVER,RACK FEED	
605	AD301826	92P200006A	INSULATOR(F)	
606	AD301827	92P200007A	INSULATOR(R)	
607	AD301846	92P100029A	GEAR,FEED	
608	AE001179	92P300009A	SPRING,RACK L	
609	AD301845	92P100028A	GEAR,MIDDLE 3	
610	AE002482	92P300019A	SPRING,RACK FEED 1A	
611	AE002179	92P100040A	ARM,IDLER 2	
612	AD301833	92P000001A	CLAMPER PLATE	
613	AD301834	92P100019A	RACK,LOADING	
614	AD301835	92P100020A	MAIN FRAME M	
615	AE001336	92P100039A	TRAY	
616	AD301837	92P100023A	GEAR,MAIN	
617	AE002647	92P100082A	CLAMPER 2	
618	AD301839	92P300002A	SPRING,RACK LOADING	
619	AD301840	92P400002A	MAGNET,CLAMPER	
620	AD301847	92P100030A	GEAR,IDLER	
621	AD301842	92P100025A	GEAR,MOTOR	
622	AE002180	92P100083A	GEAR,MIDDLE 1	
623	AD301844	92P100027A	GEAR,MIDDLE 2	
701	BZ710187	8110226804	SCREW,TAP TITE(P) BIND	2.6x8
702	AD301851	8110120604	SCREW,TAP TITE(P) PAN	2x6
703	AD301852	8107220504	SCREW,TAP TITE(S) BIND	2x5
704	AD301853	8140117254	SCREW,PAN	M1.7x2.5 P3
705	AD301913	8110220804	SCREW,TAP TITE(P) BIND	2x8
CD2001	AD301855	122H0O1901	CORD JUMPER	2H0O1901
CD2301	AD301856	122H080701	CORD JUMPER	2H080701
CD2302	AE000148	06CH232101	CORD CONNECTOR	CH232101
CP1	AD301858	069JV80180	CONNECTOR PCB SIDE	IMSA-9615S-08C-PP
⚠ M2602	AD301861	1515S98001	FEED MOTOR	BCD3B81
PCB640	AD301862	A5E601V640	PCB ASS'Y	BEC001A
PCB68A	AD301863	A5E601V680	PCB ASS'Y	BEC002A
SW1	AD301866	0515S32001	SWITCH	SSS-23-6
SW2	AE001158	0500101036	PUSH SWITCH	ESE22MH22

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			RESISTORS	
R101	AE001839	R904N7561J	RC	560 OHM 1/10W
R102	AE001814	R904N7103J	RC	10K OHM 1/10W
R103	AE001814	R904N7103J	RC	10K OHM 1/10W
R105	AE001813	R904N7102J	RC	1K OHM 1/10W
R106	AE001842	R904N7681J	RC	680 OHM 1/10W
R107	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R108	AE001827	R904N7223J	RC	22K OHM 1/10W
R109	BZ210119	R002T4102J	RC	1K OHM 1/4W
R110	AE001846	R904N7822J	RC	8.2K OHM 1/10W
R111	AE001846	R904N7822J	RC	8.2K OHM 1/10W
R112	AE001282	R803R9334J	RC	330K OHM 1/16W
R113	AE001825	R904N7221J	RC	220 OHM 1/10W
R114	AE000851	R803R9203J	RC	20K OHM 1/16W
R115	AE001845	R904N7821J	RC	820 OHM 1/10W
R116	AE001821	R904N7153J	RC	15K OHM 1/10W
R117	AE001843	R904N7682J	RC	6.8K OHM 1/10W
R119	AE001824	R904N7182J	RC	1.8K OHM 1/10W
R120	AE001825	R904N7221J	RC	220 OHM 1/10W
R121	AE001813	R904N7102J	RC	1K OHM 1/10W
R122	AE001815	R904N7104J	RC	100K OHM 1/10W
R123	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R124	AE001806	R803R9823J	RC	82K OHM 1/16W
R126	AE001824	R904N7182J	RC	1.8K OHM 1/10W
R127	AE001802	R803R9684J	RC	680K OHM 1/16W
R129	AE001824	R904N7182J	RC	1.8K OHM 1/10W
R131	AE001820	R904N7152J	RC	1.5K OHM 1/10W
R132	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R133	AE001846	R904N7822J	RC	8.2K OHM 1/10W
R136	AE001827	R904N7223J	RC	22K OHM 1/10W
R137	AE001007	R002T4123J	RC	12K OHM 1/4W
R138	AE001827	R904N7223J	RC	22K OHM 1/10W
R139	AE001788	R803R9123J	RC	12K OHM 1/16W
R140	BZ210126	R002T4222J	RC	2.2K OHM 1/4W
R141	AE001813	R904N7102J	RC	1K OHM 1/10W
R142	AE001813	R904N7102J	RC	1K OHM 1/10W
R143	AE001813	R904N7102J	RC	1K OHM 1/10W
R301	AE001833	R904N7333J	RC	33K OHM 1/10W
R302	AE001813	R904N7102J	RC	1K OHM 1/10W
R304	AE001814	R904N7103J	RC	10K OHM 1/10W
R305	AE001813	R904N7102J	RC	1K OHM 1/10W
R306	AE001889	R803R9121J	RC	120 OHM 1/16W
⚠R501	BZ210219	R0G3K2335K	RC	3.3M OHM 1/2W
⚠R502	AE001780	R3X181R82J	R,METAL OXIDE	0.82 OHM 1W
R504	AE000145	R002T2561J	RC	560 OHM 1/2W
R506	AE001774	R002T2105J	RC	1M OHM 1/2W
R507	AE001814	R904N7103J	RC	10K OHM 1/10W
R508	AD301203	R002T4101J	RC	100 OHM 1/4W
R509	AE001812	R904N7101J	RC	100 OHM 1/10W
R510	AE001815	R904N7104J	RC	100K OHM 1/10W
R511	AE001299	R803R9564J	RC	560K OHM 1/16W
⚠R512	AE001779	R3X181683J	R,METAL OXIDE	68K OHM 1W
R513	AE000934	R002T2391J	RC	390 OHM 1/2W
R514	AE000350	R002T2221J	RC	220 OHM 1/2W
R515	AE001828	R904N7272J	RC	2.7K OHM 1/10W
⚠R516	BZ210190	R63581R22J	R,FUSE	0.22 OHM 1W
R517	AE000483	R002T2821J	RC	820 OHM 1/2W
R518	AE001819	R904N7151J	RC	150 OHM 1/10W
R519	AE001813	R904N7102J	RC	1K OHM 1/10W
R520	AE001795	R803R9332F	RC	3.3K OHM 1/16W
R521	AE001835	R904N7471J	RC	470 OHM 1/10W
R522	AE001795	R803R9332F	RC	3.3K OHM 1/16W
R523	AE001843	R904N7682J	RC	6.8K OHM 1/10W
R524	AD301203	R002T4101J	RC	100 OHM 1/4W
R525	AE001814	R904N7103J	RC	10K OHM 1/10W
R526	AE001786	R803R9122F	RC	1.2K OHM 1/16W
R527	AD301203	R002T4101J	RC	100 OHM 1/4W
R528	AE001777	R002T4392J	RC	3.9K OHM 1/4W
R529	AE001826	R904N7222J	RC	2.2K OHM 1/10W
R530	AE001283	R803R9470J	RC	47 OHM 1/16W
R531	AE001804	R803R9821F	RC	820 OHM 1/16W
R532	AE001814	R904N7103J	RC	10K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R533	BZ210135	R002T4221J	RC	220 OHM 1/4W
R534	AE000374	R801R7223J	RC	22K OHM 1/10W
R535	AE000374	R801R7223J	RC	22K OHM 1/10W
R536	AE001839	R904N7561J	RC	560 OHM 1/10W
R537	AE001825	R904N7221J	RC	220 OHM 1/10W
R538	AE001825	R904N7221J	RC	220 OHM 1/10W
R540	AE001835	R904N7471J	RC	470 OHM 1/10W
R541	BZ210192	R002T4223J	RC	22K OHM 1/4W
R542	AE001819	R904N7151J	RC	150 OHM 1/10W
R543	AE001815	R904N7104J	RC	100K OHM 1/10W
R544	BZ210119	R002T4102J	RC	1K OHM 1/4W
⚠R545	AE001255	R65584150J	R,FUSE	15 OHM 1/4W
R552	AE001812	R904N7101J	RC	100 OHM 1/10W
R553	BZ210118	R002T4473J	RC	47K OHM 1/4W
R554	BZ210182	R002T4103J	RC	10K OHM 1/4W
R601	BZ210107	R002T4750J	RC	75 OHM 1/4W
R602	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
R603	AE001778	R002T4622J	RC	6.2K OHM 1/4W
R604	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R605	AD301203	R002T4101J	RC	100 OHM 1/4W
R606	AE001555	R002T4563J	RC	56K OHM 1/4W
R607	BZ210135	R002T4221J	RC	220 OHM 1/4W
R661	AE001845	R904N7821J	RC	820 OHM 1/10W
R662	AE001823	R904N7181J	RC	180 OHM 1/10W
R663	AE001823	R904N7181J	RC	180 OHM 1/10W
R664	AE001845	R904N7821J	RC	820 OHM 1/10W
R665	AE001823	R904N7181J	RC	180 OHM 1/10W
R666	AE001823	R904N7181J	RC	180 OHM 1/10W
R667	AE001823	R904N7181J	RC	180 OHM 1/10W
R668	AE001823	R904N7181J	RC	180 OHM 1/10W
R669	AE001845	R904N7821J	RC	820 OHM 1/10W
R670	AE001823	R904N7181J	RC	180 OHM 1/10W
R671	AE001845	R904N7821J	RC	820 OHM 1/10W
R672	AE001823	R904N7181J	RC	180 OHM 1/10W
R673	AE001823	R904N7181J	RC	180 OHM 1/10W
R674	AE001823	R904N7181J	RC	180 OHM 1/10W
R675	AE001845	R904N7821J	RC	820 OHM 1/10W
R683	AE001293	R904N7271J	RC	270 OHM 1/10W
R685	AE001776	R002T4133J	RC	13K OHM 1/4W
R686	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R687	BZ210162	R002T4682J	RC	6.8K OHM 1/4W
R689	BZ210060	R002T4332J	RC	3.3K OHM 1/4W
R690	BZ210202	R002T4333J	RC	33K OHM 1/4W
R691	BZ210125	R002T4224J	RC	220K OHM 1/4W
R692	AD301301	R002T4152J	RC	1.5K OHM 1/4W
R701	AE001820	R904N7152J	RC	1.5K OHM 1/10W
R702	AE001820	R904N7152J	RC	1.5K OHM 1/10W
R703	AE001814	R904N7103J	RC	10K OHM 1/10W
R704	AE001814	R904N7103J	RC	10K OHM 1/10W
R705	AE001801	R803R9682J	RC	6.8K OHM 1/16W
R706	AE001797	R803R9473J	RC	47K OHM 1/16W
R707	AE001837	R904N7473J	RC	47K OHM 1/10W
R708	AE001843	R904N7682J	RC	6.8K OHM 1/10W
R709	AE001801	R803R9682J	RC	6.8K OHM 1/16W
R710	AE001797	R803R9473J	RC	47K OHM 1/16W
R711	AE001837	R904N7473J	RC	47K OHM 1/10W
R712	AE001843	R904N7682J	RC	6.8K OHM 1/10W
R714	AE001792	R803R9273J	RC	27K OHM 1/16W
R716	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R717	AE001791	R803R9225J	RC	2.2M OHM 1/16W
R718	AE001813	R904N7102J	RC	1K OHM 1/10W
R719	AE001831	R904N7331J	RC	330 OHM 1/10W
R721	AE001821	R904N7153J	RC	15K OHM 1/10W
R722	AE001821	R904N7153J	RC	15K OHM 1/10W
R723	AE000358	R002T4471J	RC	470 OHM 1/4W
R2301	AE001783	R803R9102J	RC	1K OHM 1/16W
R2303	AE001793	R803R92R2J	RC	2.2 OHM 1/16W
R2304	AE001793	R803R92R2J	RC	2.2 OHM 1/16W
R2305	AE000854	R803R9513J	RC	51K OHM 1/16W
R2306	AE001840	R904N7562J	RC	5.6K OHM 1/10W
R2307	AE001792	R803R9273J	RC	27K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
			RESISTORS	
R2308	AE000851	R803R9203J	RC	20K OHM 1/16W
R2309	AE001796	R803R9471J	RC	470 OHM 1/16W
R2310	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R2312	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R2313	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R2314	AE001799	R803R9562J	RC	5.6K OHM 1/16W
R2316	AE000851	R803R9203J	RC	20K OHM 1/16W
R2318	AE001840	R904N7562J	RC	5.6K OHM 1/10W
R2319	AE001792	R803R9273J	RC	27K OHM 1/16W
R2321	AE000854	R803R9513J	RC	51K OHM 1/16W
R2322	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2323	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R2324	AE001783	R803R9102J	RC	1K OHM 1/16W
R2325	AE001801	R803R9682J	RC	6.8K OHM 1/16W
R2326	AE001805	R803R9822J	RC	8.2K OHM 1/16W
R2327	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2328	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2329	AE001783	R803R9102J	RC	1K OHM 1/16W
R2330	AE001783	R803R9102J	RC	1K OHM 1/16W
R2331	AE001796	R803R9471J	RC	470 OHM 1/16W
R2334	AE001784	R803R9103J	RC	10K OHM 1/16W
R2337	AE001784	R803R9103J	RC	10K OHM 1/16W
R2601	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2602	AE001288	R8E3P9185J	RC	1.8M OHM 1/16W
R2603	AE001286	R8E3P9133F	RC	13K OHM 1/16W
R2604	AE001289	R8E3P9273F	RC	27K OHM 1/16W
R2605	AE001284	R8E3P9103F	RC	10K OHM 1/16W
R2607	AE001817	R904N7122J	RC	1.2K OHM 1/10W
R2608	AE001787	R803R9122J	RC	1.2K OHM 1/16W
R2609	AE001817	R904N7122J	RC	1.2K OHM 1/10W
R2610	AE001291	R8E3P9512F	RC	5.1K OHM 1/16W
R2611	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2612	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2613	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2614	AE001285	R8E3P9123F	RC	12K OHM 1/16W
R2615	AE001811	R904N7100J	RC	10 OHM 1/10W
R2616	AE001813	R904N7102J	RC	1K OHM 1/10W
R2617	AE001813	R904N7102J	RC	1K OHM 1/10W
R2618	AE001811	R904N7100J	RC	10 OHM 1/10W
R2619	AE001812	R904N7101J	RC	100 OHM 1/10W
R2620	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2621	AE001812	R904N7101J	RC	100 OHM 1/10W
R2622	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2623	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2624	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2625	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2626	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2627	AE001820	R904N7152J	RC	1.5K OHM 1/10W
R2628	AE001827	R904N7223J	RC	22K OHM 1/10W
R2629	AE001820	R904N7152J	RC	1.5K OHM 1/10W
R2630	AE001827	R904N7223J	RC	22K OHM 1/10W
R2631	AE001816	R904N7105J	RC	1M OHM 1/10W
R2632	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2635	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2643	AE001813	R904N7102J	RC	1K OHM 1/10W
R2644	AE001790	R803R9222J	RC	2.2K OHM 1/16W
R2645	AE001813	R904N7102J	RC	1K OHM 1/10W
R2646	AE001826	R904N7222J	RC	2.2K OHM 1/10W
R2647	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2648	AE001287	R8E3P9133J	RC	13K OHM 1/16W
R2649	AE001781	R803R9101J	RC	100 OHM 1/16W
R2650	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2651	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R2652	AE001781	R803R9101J	RC	100 OHM 1/16W
R2653	AE001781	R803R9101J	RC	100 OHM 1/16W
R3001	AE001840	R904N7562J	RC	5.6K OHM 1/10W
R3002	AE001775	R002T4121J	RC	120 OHM 1/4W
R3003	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R3004	AE001829	R904N7274J	RC	270K OHM 1/10W
R3006	AE001837	R904N7473J	RC	47K OHM 1/10W
R3007	AE001843	R904N7682J	RC	6.8K OHM 1/10W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R3008	AE001813	R904N7102J	RC	1K OHM 1/10W
R3009	AE001836	R904N7472J	RC	4.7K OHM 1/10W
R3010	AE001814	R904N7103J	RC	10K OHM 1/10W
R3011	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3012	AE001841	R904N7563J	RC	56K OHM 1/10W
R3014	AE001841	R904N7563J	RC	56K OHM 1/10W
R3015	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3016	AD301004	R801R7271J	RC	270 OHM 1/10W
R3017	AE001839	R904N7561J	RC	560 OHM 1/10W
R3019	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3020	AE001839	R904N7561J	RC	560 OHM 1/10W
R3022	AE001822	R904N7154J	RC	150K OHM 1/10W
R3025	AE001835	R904N7471J	RC	470 OHM 1/10W
R3026	AE001829	R904N7274J	RC	270K OHM 1/10W
R3027	AE001821	R904N7153J	RC	15K OHM 1/10W
R3028	BZ210118	R002T4473J	RC	47K OHM 1/4W
R3029	AE001836	R904N7472J	RC	4.7K OHM 1/10W
R3030	AE001840	R904N7562J	RC	5.6K OHM 1/10W
R3031	AE001816	R904N7105J	RC	1M OHM 1/10W
R3032	AE001814	R904N7103J	RC	10K OHM 1/10W
R3033	AE001814	R904N7103J	RC	10K OHM 1/10W
R3034	AE001816	R904N7105J	RC	1M OHM 1/10W
R3035	AD301728	R801R7103J	RC	10K OHM 1/10W
R3037	AE001837	R904N7473J	RC	47K OHM 1/10W
R3038	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R3043	AE001838	R904N7474J	RC	470K OHM 1/10W
R3044	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R3045	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R3046	AE001814	R904N7103J	RC	10K OHM 1/10W
R3047	AE001814	R904N7103J	RC	10K OHM 1/10W
R3049	AE001837	R904N7473J	RC	47K OHM 1/10W
R3050	AD301203	R002T4101J	RC	100 OHM 1/4W
R3051	AE001292	R904N7183J	RC	18K OHM 1/10W
R3053	AE001838	R904N7474J	RC	470K OHM 1/10W
R3055	AE001827	R904N7223J	RC	22K OHM 1/10W
R3056	AE001813	R904N7102J	RC	1K OHM 1/10W
R3057	AE001827	R904N7223J	RC	22K OHM 1/10W
R3062	AE001813	R904N7102J	RC	1K OHM 1/10W
R3063	AE001813	R904N7102J	RC	1K OHM 1/10W
R3083	AE001833	R904N7333J	RC	33K OHM 1/10W
R3087	AE001833	R904N7333J	RC	33K OHM 1/10W
R4001	AE001290	R8E3P9391F	RC	390 OHM 1/16W
R4002	AE001809	R8E3P9750F	RC	75 OHM 1/16W
R4003	AE001809	R8E3P9750F	RC	75 OHM 1/16W
R4004	AE001810	R8E3P9820F	RC	82 OHM 1/16W
R4005	AE001809	R8E3P9750F	RC	75 OHM 1/16W
R4008	AE001812	R904N7101J	RC	100 OHM 1/10W
R4012	AE001816	R904N7105J	RC	1M OHM 1/10W
R4014	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4016	AE001781	R803R9101J	RC	100 OHM 1/16W
R4018	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4019	AE001830	R904N7330J	RC	33 OHM 1/10W
R4020	AE001794	R803R9330J	RC	33 OHM 1/16W
R4021	AE001794	R803R9330J	RC	33 OHM 1/16W
R4022	AE001814	R904N7103J	RC	10K OHM 1/10W
R4023	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4024	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4025	AE001825	R904N7221J	RC	220 OHM 1/10W
R4026	AE001812	R904N7101J	RC	100 OHM 1/10W
R4027	AE001781	R803R9101J	RC	100 OHM 1/16W
R4031	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4032	AE001808	R8E3P9511F	RC	510 OHM 1/16W
R4033	AE001811	R904N7100J	RC	10 OHM 1/10W
R4034	AE001782	R803R9102F	RC	1K OHM 1/16W
R4035	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4036	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4037	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4038	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4039	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4040	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4041	AD302345	R803R9472J	RC	4.7K OHM 1/16W

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		RESISTORS		
R4042	AE001294	R904N7680J	RC	68 OHM 1/10W
R4043	AE001814	R904N7103J	RC	10K OHM 1/10W
R4044	AE001784	R803R9103J	RC	10K OHM 1/16W
R4045	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4046	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4047	AE001830	R904N7330J	RC	33 OHM 1/10W
R4048	AE001837	R904N7473J	RC	47K OHM 1/10W
R4049	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4050	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4051	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4052	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R4053	AE001783	R803R9102J	RC	1K OHM 1/16W
R4054	AE001783	R803R9102J	RC	1K OHM 1/16W
R7306	AE001814	R904N7103J	RC	10K OHM 1/10W
R7307	AE001814	R904N7103J	RC	10K OHM 1/10W
R8001	AE001803	R803R9750J	RC	75 OHM 1/16W
R8009	AE000353	R002T2471J	RC	470 OHM 1/2W
R8010	AE001844	R904N7750J	RC	75 OHM 1/10W
R8011	AE001812	R904N7101J	RC	100 OHM 1/10W
R8014	AE001834	R904N7391J	RC	390 OHM 1/10W
R8015	AE001834	R904N7391J	RC	390 OHM 1/10W
R8016	AE001826	R904N7222J	RC	2.2K OHM 1/10W
R8017	AE001826	R904N7222J	RC	2.2K OHM 1/10W
R8032	AE001835	R904N7471J	RC	470 OHM 1/10W
R8056	AE001835	R904N7471J	RC	470 OHM 1/10W
R8059	BZ210122	R002T4472J	RC	4.7K OHM 1/4W
R8101	AE001814	R904N7103J	RC	10K OHM 1/10W
R8102	AE001815	R904N7104J	RC	100K OHM 1/10W
R8103	AE001785	R803R9104J	RC	100K OHM 1/16W
R8104	AE001814	R904N7103J	RC	10K OHM 1/10W
R8105	AE001797	R803R9473J	RC	47K OHM 1/16W
R8106	AE001837	R904N7473J	RC	47K OHM 1/10W
R8107	AE001784	R803R9103J	RC	10K OHM 1/16W
R8108	AE001784	R803R9103J	RC	10K OHM 1/16W
R8109	AE001818	R904N7123J	RC	12K OHM 1/10W
R8110	AE001818	R904N7123J	RC	12K OHM 1/10W
R8111	AE001814	R904N7103J	RC	10K OHM 1/10W
R8112	AE001796	R803R9471J	RC	470 OHM 1/16W
R8113	AE001798	R803R9560J	RC	56 OHM 1/16W
R8114	AE001783	R803R9102J	RC	1K OHM 1/16W
R8115	AE001796	R803R9471J	RC	470 OHM 1/16W
R8116	AE001784	R803R9103J	RC	10K OHM 1/16W
R8117	AE001784	R803R9103J	RC	10K OHM 1/16W
R8118	AE001813	R904N7102J	RC	1K OHM 1/10W
R8119	AE001838	R904N7474J	RC	470K OHM 1/10W
R8120	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R8121	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R8122	AE001783	R803R9102J	RC	1K OHM 1/16W
R8123	AD302345	R803R9472J	RC	4.7K OHM 1/16W
R8124	AE001783	R803R9102J	RC	1K OHM 1/16W
R8128	AE001813	R904N7102J	RC	1K OHM 1/10W
R8129	AE001814	R904N7103J	RC	10K OHM 1/10W
R8130	AE001826	R904N7222J	RC	2.2K OHM 1/10W
R8131	AE001820	R904N7152J	RC	1.5K OHM 1/10W
R8132	AE001832	R904N7332J	RC	3.3K OHM 1/10W
R8133	AE000496	R801R7221J	RC	220 OHM 1/10W
R8134	AE001796	R803R9471J	RC	470 OHM 1/16W
R8135	AE001796	R803R9471J	RC	470 OHM 1/16W
R8136	AE001800	R803R9680J	RC	68 OHM 1/16W
R8137	AE001785	R803R9104J	RC	100K OHM 1/16W
R8151	AE001784	R803R9103J	RC	10K OHM 1/16W
		CAPACITORS		
C101	AE001773	P232W1223J	CMP	0.022 UF 100V MMTS
C103	BZ110263	E50HU2220M	CE	22 UF 16 V
C104	AE001768	E50HU0221M	CE	220 UF 6.3V
C105	BZ110263	E50HU2220M	CE	22 UF 16 V
C106	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C107	AE001746	CS0YB04E4K	CC	0.015 UF 50V B
C108	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C109	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C110	BZ210177	E02LU2470M	CE	47 UF 16V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C112	AE001768	E50HU0221M	CE	220 UF 6.3V
C114	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C115	AE001769	E50HU1330M	CE	33 UF 10 V
C116	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C117	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C118	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C119	AE001544	E50HU3100M	CE	10 UF 25 V
C120	BZ110074	E50HU5010M	CE	1 UF 50V
C121	AE001273	CS0PB04K3K	CC	0.0027UF 50V B
C122	AE001744	CS0YB04B3K	CC	0.0012UF 50V B
C123	AE000467	E02LU54R7M	CE	4.7 UF 50V
C124	BZ110074	E50HU5010M	CE	1 UF 50V
C125	AE001274	CS0PCH4N2J	CC	390 PF 50V CH
C126	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C127	AE002969	CS0PCH4G2J	CC	180 PF 50V CH
C129	BZ110278	CS0RB0216K	CC	1 UF 16V B
C131	BZ110150	E50HU0101M	CE	100 UF 6.3V
C132	BZ110074	E50HU5010M	CE	1 UF 50V
C133	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C134	BZ110074	E50HU5010M	CE	1 UF 50V
C135	AE001767	E02LU5R22M	CE	0.22 UF 50V
C136	BZ110229	E02LU4220M	CE	22 UF 35V
C137	BZ110074	E50HU5010M	CE	1 UF 50V
C138	AD300788	E02LU5010M	CE	1 UF 50V
C139	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C140	AE001764	E00NU24R7M	CE	4.7 UF 16 V
C141	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C142	AE001543	E50HU0470M	CE	47 UF 6.3V
C143	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C144	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C145	AE001748	CS0YB04H4K	CC	0.022 UF 50V B
C146	BZ110074	E50HU5010M	CE	1 UF 50V
C147	AE001748	CS0YB04H4K	CC	0.022 UF 50V B
C148	BZ110074	E50HU5010M	CE	1 UF 50V
C151	BZ110074	E50HU5010M	CE	1 UF 50V
C152	BZ210177	E02LU2470M	CE	47 UF 16V
C154	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C155	BZ110278	CS0RB0216K	CC	1 UF 16V B
C156	BZ110151	CS0RF0415Z	CC	0.1 UF 50V F
C158	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C159	AE001755	CS0YCH4H1J	CC	22 PF 50V CH
C162	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C163	AE001543	E50HU0470M	CE	47 UF 6.3V
C165	AE001278	CS0YF04Q4Z	CC	0.047 UF 50V F
C166	AE001738	CS0RB04U4K	CC	0.068 UF 50V B
C169	AE001278	CS0YF04Q4Z	CC	0.047 UF 50V F
C172	AE001755	CS0YCH4H1J	CC	22 PF 50V CH
C174	AE001543	E50HU0470M	CE	47 UF 6.3V
C301	AE001762	CS0YF0414Z	CC	0.01 UF 50V F
C303	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C307	AE002826	CS0PCH412J	CC	100 PF 50V CH
C308	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C309	BZ110143	E02LU0221M	CE	220 UF 6.3V
C313	AE001544	E50HU3100M	CE	10 UF 25 V
C315	AE001544	E50HU3100M	CE	10 UF 25 V
C318	AE001544	E50HU3100M	CE	10 UF 25 V
C501	BZ110119	E02LF2222M	CE	2200 UF 16V
⚠C502	BZ110035	P2122B104M	CMP	0.1 UF 275V ECQUL
C504	BZ110143	E02LU0221M	CE	220 UF 6.3V
C505	AD301535	E02LU2101M	CE	100 UF 16V
C506	BZ110189	E02LU0471M	CE	470 UF 6.3V
C507	AE001740	CS0RF02H6Z	CC	2.2 UF 16V F
C508	AE001749	CS0YB04W3K	CC	0.0082UF 50V B
C509	AE001281	P1F4T0183J	CP	0.018 UF 50V
C510	BZ110205	E02LU5220M	CE	22 UF 50V
C511	BZ110186	E62QFC470M	CE	47 UF 200V
C512	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C513	AE002977	C0PLRR7H2K	CC	220 PF 2KV R
C514	AD301535	E02LU2101M	CE	100 UF 16V
C515	AE002978	C0J0B0514K	CC	0.01 UF 500V B
⚠C516	AE002878	CD39E0MQ3M	CC	0.0047UF 250V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C517	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C518	BZ110231	E62F00222M	CE	2200 UF 6.3V
C519	AE001253	E02L01222M	CE	2200 UF 10V
C521	AD301535	E02LU2101M	CE	100 UF 16V
C522	BZ110205	E02LU5220M	CE	22 UF 50V
C524	AE001748	CS0YB04H4K	CC	0.022 UF 50V B
C525	AD301320	C0PLRR7U2K	CC	680 PF 2KV R
C527	AE001749	CS0YB04W3K	CC	0.0082UF 50V B
C528	AD301535	E02LU2101M	CE	100 UF 16V
C530	AD301535	E02LU2101M	CE	100 UF 16V
C531	AE002979	C0JTB05S2K	CC	560 PF 500V B
C534	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C540	BZ110186	E62QFC470M	CE	47 UF 200V
C541	AE001740	CS0RF02H6Z	CC	2.2 UF 16V F
C601	BZ110096	E50HU2100M	CE	10 UF 16V
C604	BZ110150	E50HU0101M	CE	100 UF 6.3V
C701	AE001748	CS0YB04H4K	CC	0.022 UF 50V B
C702	BZ110217	E50HU53R3M	CE	3.3 UF 50V
C703	AE000467	E02LU54R7M	CE	4.7 UF 50V
C704	BZ110074	E50HU5010M	CE	1 UF 50V
C705	AE001770	E50HU54R7M	CE	4.7 UF 50V
C706	BZ110074	E50HU5010M	CE	1 UF 50V
C707	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C708	AE001544	E50HU3100M	CE	10 UF 25 V
C709	AE001544	E50HU3100M	CE	10 UF 25 V
C710	AE002980	CS0PCH4U2J	CC	680 PF 50V CH
C711	AE001544	E50HU3100M	CE	10 UF 25 V
C712	AE001737	CS0PF0N16Z	CC	1 UF 10V F
C713	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C714	AE001544	E50HU3100M	CE	10 UF 25 V
C715	AE001744	CS0YB04B3K	CC	0.0012UF 50V B
C716	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C717	AE002980	CS0PCH4U2J	CC	680 PF 50V CH
C718	AE001737	CS0PF0N16Z	CC	1 UF 10V F
C719	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C720	AE000337	E02LU5330M	CE	33 UF 50V
C721	AE001744	CS0YB04B3K	CC	0.0012UF 50V B
C722	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C723	AE001762	CS0YF0414Z	CC	0.01 UF 50V F
C724	AE001762	CS0YF0414Z	CC	0.01 UF 50V F
C725	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C726	AE001746	CS0YB04E4K	CC	0.015 UF 50V B
C727	AE001544	E50HU3100M	CE	10 UF 25 V
C728	AE001544	E50HU3100M	CE	10 UF 25 V
C729	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C730	AE001746	CS0YB04E4K	CC	0.015 UF 50V B
C731	AE001771	E50HU5R22M	CE	0.22 UF 50 V
C732	AE001762	CS0YF0414Z	CC	0.01 UF 50V F
C734	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C735	AE000467	E02LU54R7M	CE	4.7 UF 50V
C736	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C737	AE001770	E50HU54R7M	CE	4.7 UF 50V
C738	AE001762	CS0YF0414Z	CC	0.01 UF 50V F
C739	AE001543	E50HU0470M	CE	47 UF 6.3V
C740	AE001769	E50HU1330M	CE	33 UF 10 V
C741	AE001544	E50HU3100M	CE	10 UF 25 V
C742	AE001544	E50HU3100M	CE	10 UF 25 V
C743	AE001771	E50HU5R22M	CE	0.22 UF 50 V
C744	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C746	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C747	AD301348	E02LU5100M	CE	10 UF 50V
C748	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C749	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C750	AD301762	E50HU52R2M	CE	2.2 UF 50V
C751	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C752	BZ110263	E50HU2220M	CE	22 UF 16 V
C754	AE000272	E50HU2470M	CE	47 UF 16V
C755	AE001748	CS0YB04H4K	CC	0.022 UF 50V B
C756	AE001544	E50HU3100M	CE	10 UF 25 V
C757	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C758	BZ110263	E50HU2220M	CE	22 UF 16 V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C759	BZ110263	E50HU2220M	CE	22 UF 16 V
C760	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C761	AE001543	E50HU0470M	CE	47 UF 6.3V
C762	AE001673	CS0YCH4U2J	CC	680 PF 50V CH
C763	AE001673	CS0YCH4U2J	CC	680 PF 50V CH
C2301	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2302	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2303	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2304	AE002829	CS0PCH4H2J	CC	220 PF 50V CH
C2305	AE002829	CS0PCH4H2J	CC	220 PF 50V CH
C2306	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2307	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2308	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2309	AE002820	CS0PB0413K	CC	0.001 UF 50V B
C2310	BZ210177	E02LU2470M	CE	47 UF 16V
C2311	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C2312	AE002820	CS0PB0413K	CC	0.001 UF 50V B
C2603	AE001747	CS0YB04H3K	CC	0.0022UF 50V B
C2604	AE002823	CS0PB04H3K	CC	0.0022UF 50V B
C2605	AE001747	CS0YB04H3K	CC	0.0022UF 50V B
C2606	AE001747	CS0YB04H3K	CC	0.0022UF 50V B
C2607	AE001757	CS0YCH4L1J	CC	33 PF 50V CH
C2608	BZ210177	E02LU2470M	CE	47 UF 16V
C2609	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2610	AE001277	CS0YB04U3K	CC	0.0068UF 50V B
C2611	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2612	AE000835	CS0PB03L4K	CC	0.033 UF 25V B
C2613	AE001756	CS0YCH4H2J	CC	220 PF 50V CH
C2614	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C2615	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2616	AE001758	CS0YCH4Q2J	CC	470 PF 50V CH
C2617	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C2618	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C2619	AE001759	CS0YCH4S2J	CC	560 PF 50V CH
C2620	AE001276	CS0YB04S3K	CC	0.0056UF 50V B
C2621	AE001276	CS0YB04S3K	CC	0.0056UF 50V B
C2622	AE001276	CS0YB04S3K	CC	0.0056UF 50V B
C2623	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2624	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C2625	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C2626	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2627	AE000835	CS0PB03L4K	CC	0.033 UF 25V B
C2628	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C2629	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C2632	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2633	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C2634	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C2635	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C2636	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C2637	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C2638	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C2639	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C2640	AE000335	E02LU0101M	CE	100 UF 6.3V
C2641	AE000335	E02LU0101M	CE	100 UF 6.3V
C2642	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2643	BZ210177	E02LU2470M	CE	47 UF 16V
C2644	BZ210177	E02LU2470M	CE	47 UF 16V
C2645	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2646	BZ210177	E02LU2470M	CE	47 UF 16V
C2647	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C2648	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C2649	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C2654	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C2655	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C2657	AE002826	CS0PCH412J	CC	100 PF 50V CH
C2658	AE002826	CS0PCH412J	CC	100 PF 50V CH
C2659	AE002826	CS0PCH412J	CC	100 PF 50V CH
C2660	AE002826	CS0PCH412J	CC	100 PF 50V CH
C3001	BZ110278	CS0RB0216K	CC	1 UF 16V B
C3002	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C3004	AE001748	CS0YB04H4K	CC	0.022 UF 50V B

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C3005	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C3006	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C3007	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C3008	AE002981	CS0PB04Q3K	CC	0.0047UF 50V B
C3009	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C3010	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C3013	BZ110263	E50HU2220M	CE	22 UF 16 V
C3014	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C3015	AE002833	CS0PCH4W2J	CC	820 PF 50V CH
C3016	AE001543	E50HU0470M	CE	47 UF 6.3V
C3017	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C3018	AE002827	CS0PCH4E2J	CC	150 PF 50V CH
C3019	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C3020	AE001748	CS0YB04H4K	CC	0.022 UF 50V B
C3021	AE001544	E50HU3100M	CE	10 UF 25 V
C3022	AE001758	CS0YCH4Q2J	CC	470 PF 50V CH
C3023	BZ110189	E02LU0471M	CE	470 UF 6.3V
C3024	AE001753	CS0YCH4E1J	CC	15 PF 50V CH
C3025	AE001752	CS0YCH4B1J	CC	12 PF 50V CH
C3027	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C3029	AE001543	E50HU0470M	CE	47 UF 6.3V
C3030	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C3031	AE001745	CS0YB04E3K	CC	0.0015UF 50V B
C3032	AD301762	E50HU52R2M	CE	2.2 UF 50V
C3033	AE001766	E02LT4331M	CE	330 UF 35V
C3034	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C3036	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C3038	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C3040	AE001763	CS0YF0N16Z	CC	1 UF 10V F
C3041	AE001745	CS0YB04E3K	CC	0.0015UF 50V B
C3044	AE001752	CS0YCH4B1J	CC	12 PF 50V CH
C3045	AE000958	E50HU5R47M	CE	0.47 UF 50V
C3049	AE002826	CS0PCH412J	CC	100 PF 50V CH
C3050	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C3052	BZ110263	E50HU2220M	CE	22 UF 16 V
C3053	AE001741	CS0YB0215K	CC	0.1 UF 16V B
C3061	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C3065	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4001	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4002	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4003	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4004	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4005	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4006	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4007	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4008	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4009	AE000335	E02LU0101M	CE	100 UF 6.3V
C4010	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4011	AE000335	E02LU0101M	CE	100 UF 6.3V
C4012	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4013	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4014	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4015	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4016	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4017	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4018	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4019	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4020	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4021	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4022	AE002828	CS0PCH4H1J	CC	22 PF 50V CH
C4023	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4024	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4025	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4026	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4027	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4028	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4029	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4030	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4031	AE001743	CS0YB0414K	CC	0.01 UF 50V B
C4032	AE002820	CS0PB0413K	CC	0.001 UF 50V B
C4033	AE001275	CS0PF0415Z	CC	0.1 UF 50V F

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C4035	AE001755	CS0YCH4H1J	CC	22 PF 50V CH
C4036	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C4037	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4038	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4039	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4040	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4041	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4044	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4045	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4046	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4047	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4050	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4051	BZ110189	E02LU0471M	CE	470 UF 6.3V
C4062	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4063	AE000335	E02LU0101M	CE	100 UF 6.3V
C4064	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C4065	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4066	AE000838	CS0PB0N16K	CC	1 UF 10V B
C4067	BZ210177	E02LU2470M	CE	47 UF 16V
C4068	BZ210177	E02LU2470M	CE	47 UF 16V
C4069	BZ210177	E02LU2470M	CE	47 UF 16V
C4070	BZ210177	E02LU2470M	CE	47 UF 16V
C4071	BZ210177	E02LU2470M	CE	47 UF 16V
C4072	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4073	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4074	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4075	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4076	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4077	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4078	BZ210177	E02LU2470M	CE	47 UF 16V
C4079	AE001751	CS0YCH412J	CC	100 PF 50V CH
C4080	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4081	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4082	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C4083	BZ210177	E02LU2470M	CE	47 UF 16V
C4084	BZ210177	E02LU2470M	CE	47 UF 16V
C4085	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C4086	AE001742	CS0YB0413K	CC	0.001 UF 50V B
C4087	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4088	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4089	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4090	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4091	AE002826	CS0PCH412J	CC	100 PF 50V CH
C4092	AE002826	CS0PCH412J	CC	100 PF 50V CH
C4093	AE001751	CS0YCH412J	CC	100 PF 50V CH
C4094	AE001751	CS0YCH412J	CC	100 PF 50V CH
C4095	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4096	AE002820	CS0PB0413K	CC	0.001 UF 50V B
C4097	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C4098	AE001750	CS0YCH411D	CC	10 PF 50V CH
C7301	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C7302	AD301535	E02LU2101M	CE	100 UF 16V
C7303	BZ110205	E02LU5220M	CE	22 UF 50V
C7304	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C7305	AE001760	CS0YCH4W2J	CC	820 PF 50V CH
C7306	AE001760	CS0YCH4W2J	CC	820 PF 50V CH
C7308	AD301729	E02LU52R2M	CE	2.2 UF 50V
C7310	AD301729	E02LU52R2M	CE	2.2 UF 50V
C7311	AD301348	E02LU5100M	CE	10 UF 50V
C8003	AD301348	E02LU5100M	CE	10 UF 50V
C8013	AD301348	E02LU5100M	CE	10 UF 50V
C8014	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C8015	BZ110189	E02LU0471M	CE	470 UF 6.3V
C8031	AE001770	E50HU54R7M	CE	4.7 UF 50V
C8032	AE001764	E00NU24R7M	CE	4.7 UF 16 V
C8040	AE001770	E50HU54R7M	CE	4.7 UF 50V
C8042	AE001544	E50HU3100M	CE	10 UF 25 V
C8053	AE001544	E50HU3100M	CE	10 UF 25 V
C8057	AE002756	CS0YF0415Z	CC	0.1 UF 50V F
C8059	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8075	AE001770	E50HU54R7M	CE	4.7 UF 50V

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		CAPACITORS		
C8101	AE000337	E02LU5330M	CE	33 UF 50V
C8102	AE001751	CS0YCH412J	CC	100 PF 50V CH
C8105	AE001745	CS0YB04E3K	CC	0.0015UF 50V B
C8106	AE001745	CS0YB04E3K	CC	0.0015UF 50V B
C8107	AE002826	CS0PCH412J	CC	100 PF 50V CH
C8110	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8111	AD301535	E02LU2101M	CE	100 UF 16V
C8112	BZ110205	E02LU5220M	CE	22 UF 50V
C8113	BZ110205	E02LU5220M	CE	22 UF 50V
C8114	AD301729	E02LU52R2M	CE	2.2 UF 50V
C8115	AE000467	E02LU54R7M	CE	4.7 UF 50V
C8118	AD301729	E02LU52R2M	CE	2.2 UF 50V
C8119	BZ110143	E02LU0221M	CE	220 UF 6.3V
C8120	AE001756	CS0YCH4H2J	CC	220 PF 50V CH
C8121	AE002821	CS0PB0414K	CC	0.01 UF 50V B
C8122	BZ210177	E02LU2470M	CE	47 UF 16V
C8123	AE001748	CS0YB04H4K	CC	0.022 UF 50V B
C8124	BZ210177	E02LU2470M	CE	47 UF 16V
C8125	AE001275	CS0PF0415Z	CC	0.1 UF 50V F
C8126	AE002124	CS0PB0315K	CC	0.1 UF 25V B
C8129	AE002625	CS0RCH412J	CC	100 PF 50V CH
C8130	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8131	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8132	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8133	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8134	AE001752	CS0YCH4B1J	CC	12 PF 50V CH
C8135	AE001752	CS0YCH4B1J	CC	12 PF 50V CH
C8136	AE001752	CS0YCH4B1J	CC	12 PF 50V CH
C8137	AE001752	CS0YCH4B1J	CC	12 PF 50V CH
C8138	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8139	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8140	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8141	AE001754	CS0YCH4E2J	CC	150 PF 50V CH
C8142	AE001739	CS0RCH411D	CC	10 PF 50V CH
C8143	AE001739	CS0RCH411D	CC	10 PF 50V CH
C8144	BZ110189	E02LU0471M	CE	470 UF 6.3V
C8145	BZ110189	E02LU0471M	CE	470 UF 6.3V
C8146	BZ110189	E02LU0471M	CE	470 UF 6.3V
C8147	AE000565	CS0RCH4L1J	CC	33 PF 50V CH
C8148	AE000565	CS0RCH4L1J	CC	33 PF 50V CH
C8149	AE000565	CS0RCH4L1J	CC	33 PF 50V CH
		DIODES		
⚠D502	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D503	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D504	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
⚠D505	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
⚠D506	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D507	BZ410007	D23TGP15J0	DIODE,SILICON	RGP15J-G23
D509	BZ410103	D2WXGP10J0	DIODE,RECTIFIER	RGP10J-EIC
D510	AD300069	D97U02701B	DIODE,ZENER	MTZJ27B T-77
D511	BZ410033	D28T21DQN4	DIODE,SCHOTTKY	21DQ04N-TA2B1
D512	BZ410033	D28T21DQN4	DIODE,SCHOTTKY	21DQ04N-TA2B1
D513	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D514	AD300070	D97U01201B	DIODE,ZENER	MTZJ12B T-77
D515	BZ410033	D28T21DQN4	DIODE,SCHOTTKY	21DQ04N-TA2B1
D518	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D522	AD300075	D28TELS6N6	DIODE,RECTIFIER	10ELS6N-TA1B2
D523	BZ410037	D97U03301B	DIODE,ZENER	MTZJ33B T-77
D524	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D526	AD302208	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D528	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D530	AD300075	D28TELS6N6	DIODE,RECTIFIER	10ELS6N-TA1B2
D531	BZ410061	D97U01001B	DIODE,ZENER	MTZJ10B T-77
D532	AD302208	D97U03R31B	DIODE,ZENER	MTZJ3.3B T-77
D534	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D535	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D536	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D537	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D538	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D539	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D601	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		DIODES		
D602	AE001703	0021E5Q212	LED	LTL-1CHGT-002A
D656	BZ410085	D2WXN40050	DIODE,SILICON	1N4005-EIC
D685	AE001703	0021E5Q212	LED	LTL-1CHGT-002A
D701	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D702	BZ410020	D97U05R11B	DIODE,ZENER	MTZJ5.1B T-77
D2601	BZ410121	DDARDS1200	DIODE,SILICON	KDS120RTK
D3001	AD301638	0010E00330	INFRARED LED	LTE-3271T-012A-O
D3007	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D3009	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D8001	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D8003	BZ410022	D97U06R81B	DIODE,ZENER	MTZJ6.8B T-77
D8008	BZ410006	D1VT001330	DIODE,SILICON	1SS133T-77
D8101	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8102	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8103	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8106	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8107	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8108	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8109	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8110	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8111	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8112	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
D8113	BZ410119	DDDRL41480	DIODE,SILICON	MCL4148
		ICS		
IC101	AD301643	I03F3206M0	IC	LA71206M-MPB
IC501	BZ611019	I1KJ9A4310	IC	KIA431
IC502	BZ611089	I1KA98R09A	IC	KIA78R09API
⚠IC503	AD301771	000220001W	PHOTO COUPLER	PS2561L1-1-V(W)
IC701	BZ611114	I01F63FBP0	IC	AN3663FBP
IC2301	BZ611126	I03F065600	IC	LA6560
IC2601	AE002837	ICQK067080	IC	ZR36708TQC
IC2602	AD301770	I07E00358F	IC	BA10358F-E2
IC3001	AE001858	I54F50138B	IC	OEC0138B
IC3003	AD301641	I9UF032310	IC	PST3231NR
IC3099	AE002757	A2C533X015	IC	AT24C04N-10SI-2.7
IC4001	AE000842	ICQK067620	IC	ZR36762
IC4002	AE002137	ICRJ0C04N0	IC	AT24C04N-10SI-2.7
IC4003	BZ611130	I0GF9XZ010	IC	PQ070XZ01ZP
IC4005	AE000843	IF9J0164A7	IC	M12L64164A-7T
IC4007	BZ611129	ICMJ0800A7	IC	SST39VF800A-70-4C-EK
IC7301	AD301777	I17F0742K0	IC	PCM1742KE/2K
IC8002	AD301988	I0UF015010	IC	MM1501XNRE
IC8005	AD301988	I0UF015010	IC	MM1501XNRE
IC8101	AE001295	I0QJ045800	IC	NJM4580M(TE1)
		TRANSISTORS		
Q101	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q102	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q103	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q104	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q105	BZ510073	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q106	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q107	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q109	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q301	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q501	BZ510093	TJXG5NC500	FET	STP5NC50FP
Q502	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q503	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q504	BZ510077	TAAT012714	TRANSISTOR,SILICON	KTA1271_Y-AT
Q505	BZ510105	TCAT03209Y	TRANSISTOR,SILICON	KTC3209_Y-AT
Q506	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q507	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q508	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q509	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q510	BZ510070	TCAT032034	TRANSISTOR,SILICON	KTC3203_Y-AT
Q511	BZ510106	TAAT01241Y	TRANSISTOR,SILICON	KTA1241_Y-AT
Q513	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q514	BZ510002	T8YJ2412K0	TRANSISTOR,SILICON	2SC2412KT146 R,S
Q530	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q531	BZ510001	T6YJ1037K0	TRANSISTOR,SILICON	2SA1037AKT146R,S
Q651	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q652	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		TRANSISTORS		
Q653	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q654	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q655	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q656	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q657	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q658	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q659	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q660	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q661	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q662	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q663	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q664	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q665	BZ510108	TAAA1504SY	TRANSISTOR,SILICON	KTA1504S_Y_RTK
Q666	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q2601	BZ510112	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2602	BZ510112	T67J1036K0	TRANSISTOR,SILICON	2SA1036KT146
Q2603	BZ510113	T27T030180	FET	2SK3018
Q2604	BZ510113	T27T030180	FET	2SK3018
Q2605	BZ510113	T27T030180	FET	2SK3018
Q3001	BZ410107	0002700690	PHOTO COUPLER	RPI-303
Q3002	BZ410107	0002700690	PHOTO COUPLER	RPI-303
Q3003	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q3004	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q3005	BZ410106	0002700680	PHOTO COUPLER	RPI-352C40N
Q3006	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L
Q3007	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q3008	BZ410097	0000M00390	PHOTO TRANSISTOR	ST-304L
Q8003	BZ510021	TNYJC05001	COMPOUND TRANSISTOR	DTC124EKAT146
Q8004	BZ510073	TAATA12660	TRANSISTOR,SILICON	KTA1266-AT(Y,GR)
Q8005	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q8006	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q8007	BZ510026	TPYJC05001	COMPOUND TRANSISTOR	DTA124EKAT146
Q8101	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q8102	BZ510067	TNAAC05002	COMPOUND TRANSISTOR	KRC103SRTK
Q8103	BZ510107	TPAAA05001	COMPOUND TRANSISTOR	KRA101SRTK
Q8104	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q8105	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
Q8106	BZ510088	TNAAD05001	COMPOUND TRANSISTOR	KRC104SRTK
Q8107	BZ510109	TCAA3875SY	TRANSISTOR,SILICON	KTC3875S_Y_RTK
		COILS &TRANSFORMERS		
L101	BZ310114	031626009R	COIL,BIAS OSC	1626009
L102	BZ310041	02167F101J	COIL	100 UH
L103	AE002102	021LA65R6K	COIL	5.6 UH
L105	BZ310041	02167F101J	COIL	100 UH
L106	BZ310039	02167F220J	COIL	22 UH
L107	BZ310039	02167F220J	COIL	22 UH
L301	BZ310039	02167F220J	COIL	22 UH
⚠L501	AE001705	029T000107	COIL,LINE FILTER	0R4A223F20
L502	AD301539	02AHB0A0A4	CORE,FERRITE	W5T_20*10*10A
L505	BZ310039	02167F220J	COIL	22 UH
⚠L506	BZ310091	021W7A220K	COIL	22 UH
L701	BZ310039	02167F220J	COIL	22 UH
L702	BZ310039	02167F220J	COIL	22 UH
L703	BZ310041	02167F101J	COIL	100 UH
L704	AD301445	021LA6100J	COIL	10 UH
L3002	BZ310091	021W7A220K	COIL	22 UH
L3003	AE000773	021LA6120J	COIL	12 UH
L4001	BZ310191	02167F2R2J	COIL	2.2 UH
L8004	AE002183	021LA6470J	COIL	47 UH
L8008	AE002183	021LA6470J	COIL	47 UH
L8101	AE000828	02167F1R0K	COIL	1 UH
L8102	AE000828	02167F1R0K	COIL	1 UH
L8103	AE000828	02167F1R0K	COIL	1 UH
L8104	AE000828	02167F1R0K	COIL	1 UH
L8105	AE001704	02167FR33K	COIL	0.33 UH
L8106	AE001704	02167FR33K	COIL	0.33 UH
⚠T501	AE001706	0481260074	TRANSFORMER,SWITCHING	81260074
		JACKS		
J601	AE002109	060J401096	RCA JACK	MTJ-032-04B-01-FE_LF
J602	AE002109	060J401096	RCA JACK	MTJ-032-04B-01-FE_LF
J603	AE002110	060J421035	RCA JACK	MTJ-032-04A-01-FE_LF

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		JACKS		
J8001	AE002758	060J411031	RCA JACK	MSP-213V1-432 NI LF
J8002	AE002759	060J431020	RCA JACK	MSP-213V2-432_NI_LF
J8101	AE002760	060J411033	RCA JACK	MSP-213V1-732 NI LF
J8102	AD301545	063D700005	JACK	MDC-070V
J8103	AE002761	060J411032	RCA JACK	MSP-213V1-652 NI LF
		SWITCHES		
SW601	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW602	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW603	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW604	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW605	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW685	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW686	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW687	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW689	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW690	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW691	AE001707	0504R01T38	SWITCH TACT	EVQ11L05R
SW3001	BZ612016	0508S11001	SWITCH (LEAF)	LSA-1144EAU
SW8101	AD301546	0510Y24001	SWITCH SLIDE	SK42H01G9A
		P.C.BOARD ASSEMBLIES		
PCB010	AE002762	A2C533X010	PCB ASS'Y	VMC300A
PCB130	AE002763	A2C533X130	PCB ASS'Y	VMC298A
PCB260	AE002764	A2C533X260	PCB ASS'Y	VECA44A
PCB270	AE002765	A2C533X270	PCB ASS'Y	VECA42A
PCB280	AE002766	A2C533X280	PCB ASS'Y	VECA43A
		MISCELLANEOUS		
B501	BZ310122	024HT03563	CORE,BEADS	W4BRH3.5X6X1.0X2
B502	BZ310121	024HT03553	CORE,BEADS	W5RH3.5X5X1.0
B2601	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2602	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2603	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2604	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B2605	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4001	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4002	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4003	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4004	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4005	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4006	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4007	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B4008	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B7301	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B7302	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8101	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8102	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
B8103	BZ310186	024HC31022	CORE,BEADS	FCM2012H-102T04
BT601	AE000012	1412004008	BATTERY,MANGAN	R03(AB)E_2P_G
CD102	AE001719	122H061504	CORD,JUMPER	2H061504
⚠CD501	AE001245	1209419910	CORD,AC BUSH	9419910
CD601	AE001247	122W0C1004	CORD,JUMPER	2W0C1004
CD603	AE002982	WDL6006038	FLAT CABLE	AWM2468 AWG26 6C BLACK 60MM
CD681	AE002767	122H051202	CORD,JUMPER	2H051202
CP101	BZ614011	0697290620	CONNECTOR PCB SIDE	TOC-C09X-A1
CP102	AE001239	069J760599	CONNECTOR PCB SIDE	IMSA-9604S-06C
CP103	AD301649	067U002019	WIRE HOLDER	B2013H02-2P
CP501	AE001242	06CH2C0302	CORD,CONNECTOR	CH2C0302
CP601	AE000098	069EVC3020	CONNECTOR PCB SIDE	00_6232_012_102_800
CP602	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
CP603	BZ614333	067U006049	WIRE HOLDER	B2013H02-6P
CP651	AE001711	069J750019	CONNECTOR PCB SIDE	IMSA-9604S-05Z13
CP652	AE001241	069WVC001A	CONNECTOR PCB SIDE	TOC-G12X-A1
CP681	AE001711	069J750019	CONNECTOR PCB SIDE	IMSA-9604S-05Z13
CD6002	AE001243	06CPL02006	CABLE	CPL02006
CD6003	AE001712	06CPBA2003	CORD,RCA PIN	TD-020301-3
CD8002	AE001246	122F080601	CORD,JUMPER	2F080601
CP2601	AE001710	069GYOT079	CONNECTOR PCB SIDE	09-5000-024-001-006
CP2602	AD301555	069EV83010	CONNECTOR PCB SIDE	00_6232_008_006_800
CP2603	BZ614350	069S230629	CONNECTOR PCB SIDE	A2001WV2-3P
CP3001	BZ614289	06972C0010	CONNECTOR PCB SIDE	TMC-J12P-B2
CP4002	AD301554	069S2C0629	CONNECTOR PCB SIDE	A2001WV2-12P
CP8002	AE001240	069J780599	CONNECTOR PCB SIDE	IMSA-9604S-08C

ELECTRICAL REPLACEMENT PARTS LIST

Location No.	TSB P/N	Reference No.		Description
		COILS &TRANSFORMERS		
CP8102	AE001240	069J780599	CONNECTOR PCB SIDE	IMSA-9604S-08C
⚠F501	AE001715	081PC2R505	FUSE	51MS025L
FH501	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
FH502	AE002634	06710T0009	HOLDER,FUSE	EYF-52BCY
OS601	AE001713	077Q037002	REMOTE RECEIVER	PIC-37143TH5
OS8101	AE000830	07AQ000009	OPTICAL DEVICE	OFTG038101
TM601	AE001296	076D0HL010	TRANSMITTER	ORV202N18030
⚠TU301	AE001237	0162300038	RF UNIT	115-V-H015ARE
V651	AE002768	0040E34003	LED DISPLAY	LTG-0366AM-J
X101	AE001717	100DT3R528	CRYSTAL	HC-49/U
X3001	AE001716	100BT01004	CRYSTAL	HC-49U/S
X4001	AD301803	100BT02701	CRYSTAL	HC-49U/S

RESISTOR

RC..... CARBON RESISTOR

CAPACITORS

CC..... CERAMIC CAPACITOR
CE..... ALUMI ELECTROLYTIC CAPACITOR
CP..... POLYESTER CAPACITOR
CPP..... POLYPROPYLENE CAPACITOR
CPL..... PLASTIC CAPACITOR
CMP..... METAL POLYESTER CAPACITOR
CMPL..... METAL PLASTIC CAPACITOR
CMPP..... METAL POLYPROPYLENE CAPACITOR

TOSHIBA CORPORATION
1-1, SHIBAURA 1-CHOME, MINATO-KU, TOKYO 105-8001, JAPAN